

# THE IRON AGE

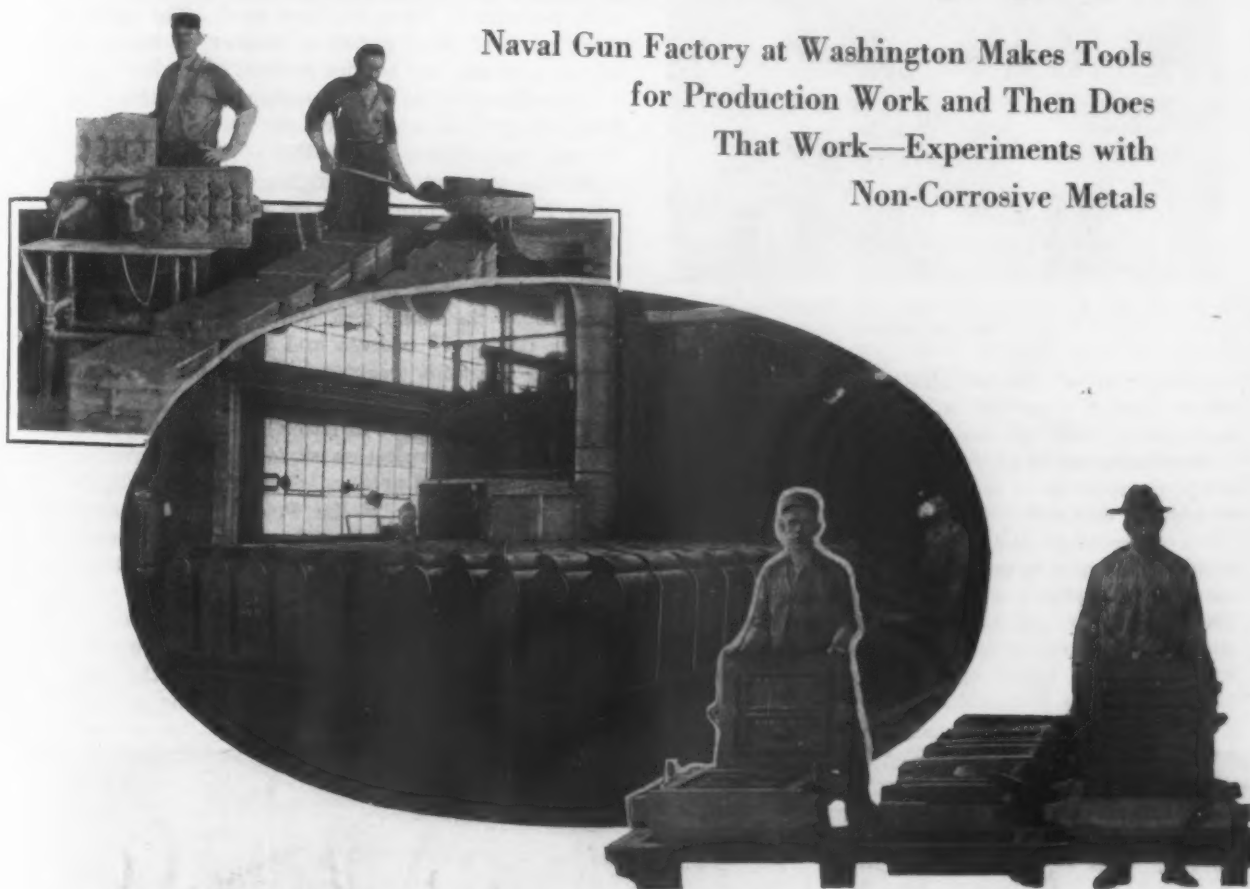
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## Manufacture of Post Office Equipment

Naval Gun Factory at Washington Makes Tools  
for Production Work and Then Does  
That Work—Experiments with  
Non-Corrosive Metals



**S**IGNING of the treaty limiting naval armament, with the coincident stoppage of important construction work, resulted in the naval establishments being confronted with the serious problem of reducing personnel to a point commensurate with the reduced activities remaining under the provisions of the treaty. This deflation required intensive reorganization of departments in the manufacturing establishments and involved consolidations and similar moves for maintaining efficient operating conditions.

To carry on the necessary remaining naval work there was required a nucleus force of skilled mechanics whom, by reason of their many years of experience in the manufacturing and fabrication of ordnance material and special navy material, manifestly it would be difficult to replace in periods of national emergency. While the treaty did not necessitate abandonment of all

lines of naval construction, the work which could be continued was not of such status as to permit it to be carried along without delay. Substitution for the activities which were stopped by the treaty called for obtaining material for new lines of work and the perfecting of plans for carrying on the work ahead of the original building program. This condition presented a problem in profitably employing the necessary nucleus of skilled workmen in the meantime.

As government manufacturing plants are forbidden by law to enter commercial fields and to take on work of a purely commercial character, it was necessary to limit consideration of profitably using naval plants to the requirements of other federal departments. Investigation showed that a considerable amount of supplies for the federal departments could be manufactured in plants such as the naval gun establishment at Washington as economically as when previously obtained from commercial sources. And manufacture of such material in a government plant, that otherwise would be operating on a limited scale, would result in cutting down unit overhead expense and bring about a saving to the federal treasury, even more than might be evident at first glance.

Fig. 1—(Upper Left) Match Plate Pattern Equipment Permitting Independent Operation of Two Separate Molding Floors Before Pouring Castings

Fig. 2—(Lower Right) Another View of Match Plate Pattern Equipment

(Oval) A Day's Result of Spraying of Letter Boxes Ready to Be Placed in Baking Oven



Fig. 3—After Cooling, Castings Are Gaged and Inspected for Precision Before Shipping

Convinced of the potentiality of cooperation between federal departments, the Post Office Department placed with the naval gun plant at Washington a manufacturing order for the production of the letter boxes required as a supply for one year. Previous to placing this order, the Post Office Department decided to redesign and standardize the several types of letter and mail boxes. This was to eliminate, as far as possible, features which tended greatly to increase production costs, and also to make possible the fabrication of the boxes by use of production methods with machinery to a larger extent than was possible with previous designs.

In connection with the manufacture of the box of new design, the Post Office Department also planned to have produced, as the property of the Government, all of the necessary stamping and forming tools for the manufacture of parts. These tools have been made to fit the average commercial equipment and are to be furnished to contractors who may receive subsequent contracts for boxes. In carrying out these plans the naval gun plant was authorized to design and manufacture the necessary tools for use in manufacturing detailed parts for the boxes, with a view to economical production methods.

Design of the letter boxes having provided standardization and interchangeability so far as possible, the tools were designed and made with the object of effecting the greatest latitude of interchangeability of tools between the several types of boxes, together with the necessary accuracy to permit maximum economy in assembly of the parts produced.

In addition to the establishment of mechanical standards in the manufacture of letter boxes, the department has been confronted for some years with the problem of preventing deterioration of mail box equipment in service, due

primarily to corrosion. In many sections of the country, such as along the seacoast and in manufacturing centers, salt air, acid fumes, etc., cause rapid deterioration of steel equipment. This necessitates large expenditures for upkeep and replacement. Hence the department desired to conduct practical tests under service conditions of mail box equipment made from material more resistant to corrosion than ordinary steel. The department previously had been utilizing copper-bearing steel for this purpose, as it was recognized that this material is slightly superior to steel containing no copper, but this in itself has not proved entirely satisfactory.

With the cooperation of producers of other classes of metal, it was arranged to make experimental lots of standard letter boxes from brass, zinc and monel metal, and there is under consideration other material more resistant to corrosion than steel. The naval gun plant made of these metals a number of boxes which will be sent out into service in localities where serious deterioration of steel boxes previously has taken place. This will provide a practical test under service conditions, and determine whether the higher cost involved in the initial production of the boxes, when made from the more expensive metals, is justified in view of the additional service obtained. In addition to the work in connection with the manufacture of boxes from special metals, all of the small steel boxes manufactured by the naval gun plant were treated by the Parker rust-proof process and also were painted, in the belief that this treatment would enhance their resistance to corrosion.

In this manufacture of letter boxes plans were made for dividing the project so as to facilitate production, effect economies and produce boxes of the several classes at the rate desired by the Post Office Department. While under ordinary conditions the manufacture of boxes all of one kind as a lot would have been the easier method, the needs of the department required boxes of the several types to be produced coincidentally. This necessitated a program of work which would provide an adequate number of boxes to meet the needs of the service for each type of boxes. With this in view, the

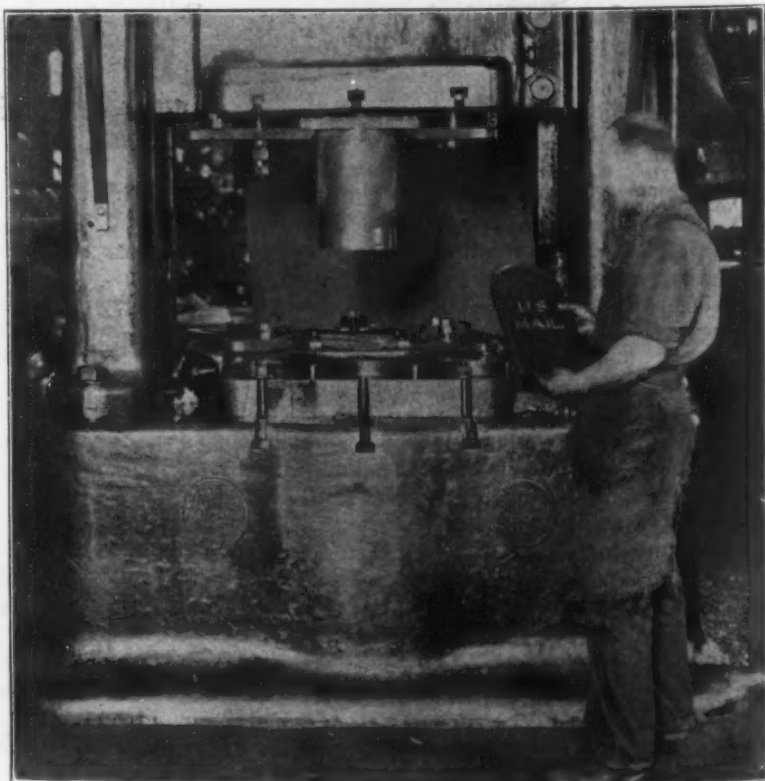


Fig. 4—A 500-Ton, Single Action Press Embossing and Forming Sides of Letter Box, with Blank in Position for Operation



Fig. 5—Showing Process of Sub-Assemblies Together With Final Assembly

projects for the several classes were divided into lots which would permit efficient production. Consequently a program was arranged to carry each operation on a given type of box so as to preclude loss of time of equipment and personnel.

The following general plan of operation was adopted in the handling of the work:

- 1—Design of tools.
- 2—Procurement of sheet steel and other commercial raw materials by purchase.
- 3—Manufacture of tools.
- 4—Production of the necessary patterns for manufacture of castings.
- 5—Cutting of sheet metal required in forming up parts in quantity by special shears and equipment formerly used in the manufacture of ammunition containers.
- 6—Manufacture of castings required for pull-down hinge fittings, etc.
- 7—Forming of corner moldings for package boxes and combination boxes, with special dies, using forge-shop equipment.
- 8—Stamping, forming and punching sheet metal details in heavy presses designed, and ordinarily used, for the manufacture of ordnance material. In these operations the special tools and equipment belonging to the Post Office Department were utilized.
- 9—Production of sub-assemblies from detailed parts, such as hinge assemblies on fronts, punching additional holes for final assembly, etc.
- 10—Parkerizing and painting such sub-assemblies as could not be handled in the finally assembled box.
- 11—Final assembly of boxes from sub-assemblies and details.
- 12—Mechanical inspection of assembled boxes.
- 13—Painting of boxes.—In this work small boxes were painted by the spraying method, one coating of red lead being applied and air-dried, after which a coating of baking enamel was applied and the box baked for setting the enamel. In the case of package boxes and combination boxes one coat of air-drying red lead and one coat of air-drying standard paint were applied.
- 14—Final inspection of boxes was by a commissioned officer of the United States Navy and by Post Office inspectors.
- 15—Crating of boxes for shipment.
- 16—Shipment of boxes to various points as designated by the Post Office Department.

Productive patterns were made for use in the manufacture of all castings, including pull-down parts covering the letter aperture, operating levers and feet. These patterns, when mounted on a split pattern, jar and squeeze, ram, pattern-draw molding machine, permitted production of castings at a minimum cost. Figs. 1 and 2 show the match plate pattern equipment, which allows the operation of two separate molding floors, each operating independently of the other until final assembly before pouring castings. After cooling, the castings are gaged and inspected for precision as shown in Fig. 3, thus assuring the minimum difficulty in assembly previous to shipping from the foundry. The tools were

designed primarily so as to be applicable to any similar project, and for use on any or all of the various metals which have been mentioned.

#### Embossing and Forming

Blanking, embossing and forming of the metal members of the boxes was accomplished by the use of the power presses of the naval gun plant machinery equipment. Until recently these presses were used in the manufacture of various sheet metal parts of torpedoes for naval use. It is of interest to observe that they range from 150-ton to 750-ton capacity.

In Fig. 4 is shown a 500-ton, single action press in operation embossing and forming sides of the letter box, with the blank in position for operation and the resultant product in the hands of the operator. The back and front members, together with detail parts, are being produced by a similar method on double action presses. Fig. 5 shows the process of the sub-assemblies, together with the final assembly. The routing of this material along with the operations is followed in sequence, to maintain a constant flow of



Fig. 6—Corner Molding of Package Box Under Welding Process by Use of Acetylene Torch



material for each succeeding operation and preclude as far as possible all lost motion and duplication of effort.

Manufacture of the package boxes presented certain operations that were somewhat difficult, due to their design and size. These are made on machines similar to those used for making smaller letter boxes, the operation being identical except as to dimension and shapes. One 300-ton press operates a gang punch, capable of punching simultaneously any number or size of holes—from two to 18 in number and  $\frac{1}{8}$  in. to  $1\frac{1}{2}$  in. in diameter. Fig. 6 shows the corner molding of a package box under the welding process by use of the acetylene torch. These corner molding members previously have been formed and bent hot by use of a die in a forge shop, later trimmed to the correct dimen-

have been to the effect that the steel boxes compare favorably with any boxes previously produced. Enough time has not expired to give an opinion with regard to the justification of the use of higher-priced metals in the fabrication of the smaller sized boxes.

### Standard Sanitary Mfg. Co. Starts Construction of New Baltimore Plant

Standard Sanitary Mfg. Co., Pittsburgh, recently broke ground for its new Baltimore plant, which will represent completed an investment of around \$4,000,000. The plant, which will be located on a 48-acre site about one-half mile back from the waterfront, is to be a modern duplication of the present Pittsburgh district units of the company and will embrace a large foundry,



Fig. 7—(In Circle) Final Assembly of Package Boxes for Red Leading and Painting

Fig. 8—(Above) No. 2 Letter Boxes Being Painted by Compressed Air Spray Under 40-Lb. Pressure



sion and then ready for welding prior to assembly.

Corner molding is riveted to side members by means of a pneumatic power-operated riveting machine. The corner molding functions in a dual capacity by (1) forming the main construction member of the box and (2) extending below the body of the box to the ground line and thus forming four supports or feet upon which the box rests when installed. Fig. 7 shows the final assembly of package boxes, after which they are ready for red leading and final painting.

Fig. 8 shows No. 2 letter boxes being painted by compressed air spray operated under 40-lb. pressure. By this method one employee is capable of red-leading, or applying the final coating of chrome green enamel, to 220 boxes in a day of 8 hr. The boxes are then baked in an enameling oven at a temperature of 180 deg. Fahr. for a period of 4 hr. One illustration on page 1369 shows the result of a day's spraying ready to be placed in the baking oven. It is interesting to note that otherwise idle mold and core-drying equipment in the foundry is being utilized for baking these enameled boxes.

Reports received up to the present from the service regarding the boxes produced at the naval gun plant

an enameling department, a warehouse and a machine shop. Initial construction has been so mapped out that additions may be made to all of the buildings and there is space for the installation of a brass foundry and a pottery department, which the company figures ultimately will be necessary at this plant, the primary purpose of which is to better supply the New England and Atlantic Coast trade. There are rail connections to the site with all roads entering Baltimore and since there is only a short haul to the waterfront, it is probable the company will make a good many shipments by water. This plant is the largest item of an extensive building program of the company, which includes new warehouses in Indianapolis and Birmingham, Ala., beside the extension of its Louisville, Ky., plant.

The merger of the American Steam Pump Co., and the Advance Pump & Compressor Co., both of Battle Creek, Mich., has been agreed upon subject to the approval of the stockholders of the respective organizations.



# Ohio Foundrymen Meet in Toledo

Association Considers Important Subjects and Re-elects  
Officers—Plant Visitations and Entertainment Features

WITH an attendance of over 150, including members of the Michigan and Indiana State associations, the annual meeting of the Ohio State Foundrymen's Association was held Nov. 15 and 16 at the Toledo Yacht Club, where the visitors were entertained at luncheon the opening day as guests of the Toledo Founders' Association and where a banquet and entertainment were provided in the evening.

The meeting was opened with an address of welcome by B. F. Brough, mayor of Toledo, who was introduced by C. C. Smith, Toledo Steel Castings Co., general chairman of the Toledo committee. An interesting program of papers was presented and some of these were followed by considerable discussion. Arthur J. Tuscany in his annual report as secretary-manager spoke of the marked progress that had been made by the association in the past year. During that period, 33 new members were taken in, four members were lost and the total present membership is 204. He spoke in praise of the work done by the consulting cost accountant during the year and stated that 60 members are now using the cost system.

A paper on "Patterns, the Starting Point of Profit and Loss," was read by Dan M. Avey, managing editor of the *Foundry*, Cleveland. He referred to the waste due to inferior pattern equipment and favored educational work among customers regarding proper pattern equipment. He also emphasized the need of close cooperation between the pattern shop and the foundry. In some of the large foundries where the two departments formerly did not work closely together, a marked change has appeared in the past few years and the speaker declared that jobbing foundries could profit by bringing about the same cooperation of the two departments. However, he said there is a third factor to be considered, this factor being the customer who must be taught to provide proper pattern equipment. The speaker referred to a practice followed by some foundries in having clauses in their contracts giving specifications for their pattern equipment and suggested that the foundries go further back and include pattern specifications in their forms used for making estimates.

W. M. Todd, district manager of the Western Adjustment Co., Toledo, read a paper on "Your Insurance Contracts and the Adjustment of Losses," and also referred to Mr. Avey's discussion, declaring that the bone of contention of insurance adjusters is in obsolete patterns and that it would be a great help to adjusters in case of fire if there were no obsolete patterns to dispute over. Mr. Todd urged foundrymen to become well acquainted with the terms of their insurance contracts, stating that by so doing they might save themselves from considerable financial loss in case of fire.

"Technical Control in the Brass Foundries" was the subject of a paper by Fred L. Wolf, technical superintendent of the Ohio Brass Co., Mansfield, Ohio, who declared that users of alloys are becoming more critical and emphasized the importance of technical control throughout a foundry and also urged a carrying on of research work in all departments. Referring to some tests in his company's plant, he said that it had been found that a reduction of 100 deg. in the pouring temperature made a difference of 13,000 lb. in the tensile strength of the metal tested. The speaker also considered the core department from the technical standpoint and pointed out the advantages of technical control in that department. He said that in their plant standard mixtures had been adopted for different cores as well as various combinations to produce the same results. Core losses formerly amounting to 40 per cent had been reduced to less than 8 per cent last year.

"Foundry Costs, Ferrous and Non-ferrous," was discussed at some length by E. T. Runge, E. T. Runge Cost Co., Cleveland, who circulated a questionnaire among the foundrymen asking them to make an estimate of the cost of making 100 lb. of gray iron based on certain stated prices for material and labor. Replies to this questionnaire showed a range of from 4.80c. to 11c. per lb., or a difference of almost 6.20c. per lb. A similar questionnaire on the cost of making brass castings showed a difference of 9c. per lb. in the estimates.

T. E. Jones outlined courses for the training of foremen and of conference leaders that are being offered to the manufacturers of Ohio by the Trades and Industries Division of the Ohio State Board of Vocational Education, with which it is affiliated. He pointed out that the modern foreman lacks the background of training. In the foreman's course the plan he suggested was to pick out 15 from 25 or more foremen in a plant and give them a course of training for two weeks and during the same time he would select from the 15, five or six of the most competent men and give them an intensive course of instruction with a view of having them supervise or conduct the work after the outside agency has given it up. It is the aim in the foremen's course to train the men in proper methods of instruction and show them how and what to teach. The course for the training of conference leaders is designed to prepare executives to conduct conferences on departmental administration.

During a round table discussion, suggestions were made that the foundrymen might be able to arrange for a clearing house of credit information in order to keep each other posted regarding the credit of their customers, and also that some plan of mutual fire insurance might be worked out that would reduce their premiums. These matters were referred to the board of directors. Addition to the uniform trade customs was proposed. One provides that when a quotation on castings is made it is for acceptance within 30 days and the pattern equipment is to be furnished immediately. In case a quotation is for more than one class of work at different prices, the quotation, if accepted, must be accepted for all the work quoted on. A minimum charge was also proposed for any order. These additions to the uniform trade customs were referred to the board of directors, for further discussion and later action.

J. H. Bruce, Bowler Foundry Co., Cleveland; George Altens, Altens Foundry & Machinery Co., Lancaster; Henry Loudenslager, Loudenslager Foundry Co., Columbus; I. W. Warden, Wellston Mfg. Co., Wellston, Ohio, and A. H. Kramer, Advance Foundry Co., Dayton, Ohio, were elected directors for a three year term. All the old officers were re-elected. They are: President, Frank W. Huber, American Rolling Mill Co., Middletown, Ohio; vice-president, J. H. Bruce, Bowler Foundry Co., Cleveland; treasurer, Walter Seelbach, Walworth Run Foundry Co., Cleveland, and secretary and manager, Arthur J. Tuscany.

At the banquet Thursday evening John R. Cowell, president of the Toledo Chamber of Commerce, was the principal speaker. J. Edgar Lee, president Michigan Foundrymen's Association, also spoke. Following the speaking a very entertaining program was provided through the courtesy of a number of leading pig iron distributors.

Friday morning the foundrymen inspected the plant of the Willys-Overland Co., which entertained the visitors at luncheon, and later as guests of Pickands, Mather & Co., they visited the plant of the Toledo Furnace Co.

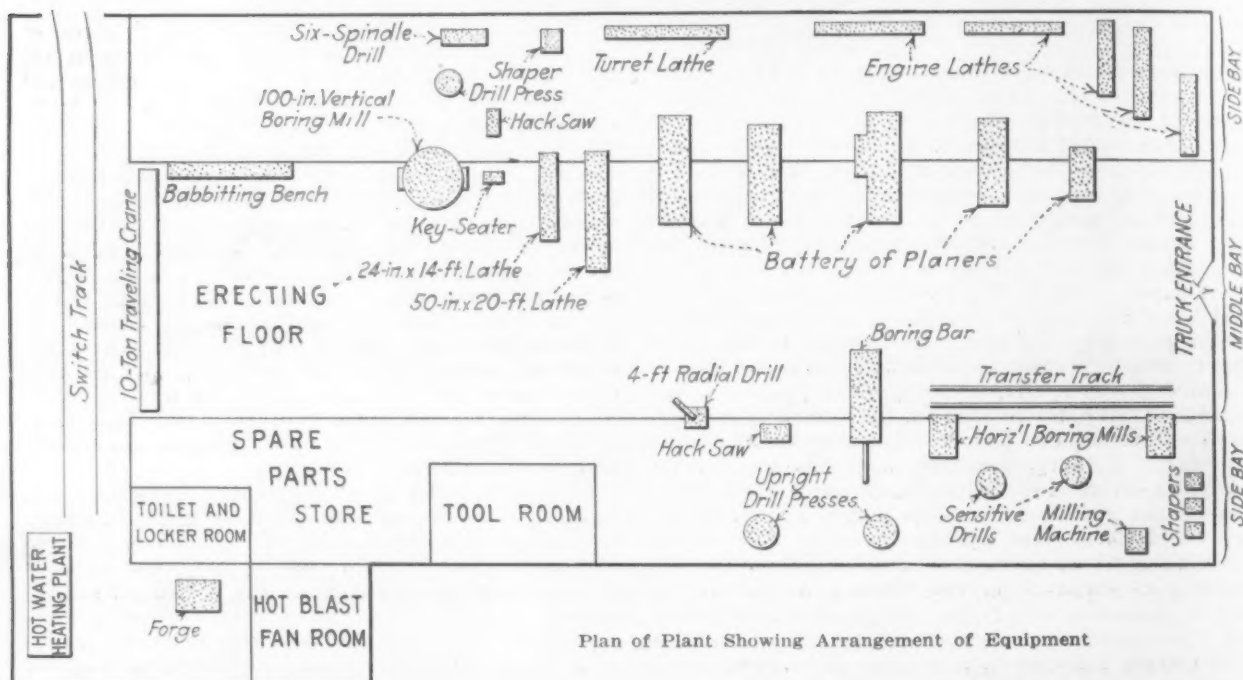
# Manufacture of Scrap-Yard Machinery

## Milwaukee Plant Designed and Equipped for Exclusive Production of Alligator Shears—Sequence of Operations Well Planned

BY GILBERT L. LACHER

**Q**UANTITY production owes much to metal-working machinery. Machine tools made it possible for the automobile industry, in hardly a quarter of a century, to put its product within reach of most American purses. Throughout all branches of manufacture, metal-working machines have both reduced cost of production and accelerated rate of consumption. In

which generous window space has been provided. Continuous sash in the outside walls is further insurance of excellent natural lighting. Briefly, the middle bay is used for machining the larger parts of the shears and for final assembling, while the side bays are employed on the smaller parts. A standing principle of the plant's operations is always to have an ample supply of small



Plan of Plant Showing Arrangement of Equipment

fact, so rapidly are our natural resources being converted into goods for the use of mankind that their exhaustion has become a recognized danger. Conservation is now widely urged and increasingly practised, and one of the most potent agencies operating to that end is the reclamation of waste materials for re-use in industry.

In reclaiming materials, metal-working machinery plays as prominent a rôle as in increasing their consumption. Out of approximately 6000 alligator shears in use in this country, fully 95 per cent are employed in iron and steel scrap yards for cutting up material into suitable lengths for rerolling and remelting. This type of machinery has been made largely in shops where the main output has consisted of other products. The fact that a recently constructed Milwaukee plant is engaged exclusively in the production of alligator shears is convincing testimony to the growing size and importance of the scrap business. The new factory of Doelger & Kirsten, Milwaukee, built less than two years ago to take care of expanding trade, was designed and equipped for manufacture on a production basis.

Having a capacity of 850 machines a year, this plant is laid out to permit uninterrupted progress of fabrication from the time castings are received at one end of the building until completely assembled shears are loaded on railroad cars at the other end. There are three parallel bays, the roof of the middle bay projecting above the side bays in the form of a cupola in

parts on hand, so that assembly operations are never delayed.

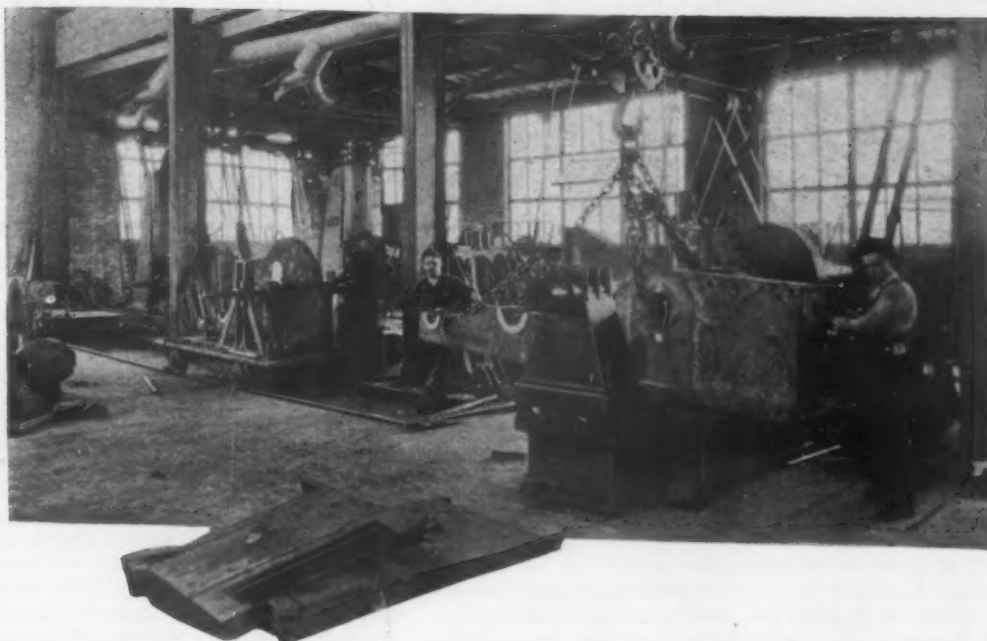
Shears are manufactured in a variety of cutting capacities, ranging from 1½ to 7-in. square cold soft steel. Most of the machines made, including those used in scrap yards, are of the continuous-operating type. Automatic machines controlled by clutches are also manufactured, to be used principally by forge shops and chain works, where it is desirable to stop and start a machine at intervals rather than to shear large quantities of material without interruption, as is the practice in old material yards.

All parts of the shears are cast or forged steel, except the flywheels, which are made of cast iron. The castings and forgings, delivered in the central bay by motor truck are unloaded by a 10-ton 40-ft. span Milwaukee Electric Crane & Mfg. Co. overhead motor-driven crane, which travels the length of the plant.

The first machining operation is the boring of the jaw and frame castings. To insure an accurate fit, the two parts are bored together. Most of this work is done on two Newton horizontal boring mills located on one side of the central bay near a door where motor trucks enter with the rough castings. Extending between the mills is a track carrying two special cars equipped with jigs, which are used for transferring work from one mill to the other. After the first mill has machined the bore for the pin connecting jaw and frame, a transfer is made to the second mill, which



At the Left the Jaw and Base of a No. 2 Alligator Shear, Set Up on a Transfer Car, Are Being Bored by a Horizontal Mill. At the right may be seen the base of a No. 4 shear being placed on a large horizontal boring bar



machines a bore in the rear end of the jaw for a pin joining the jaw and a connecting rod attached to the crankshaft. On the same side of the central bay, just beyond the Newton mills, is a No. 6 Barrett boring bar, which is used to bore the heavier sizes of shears.

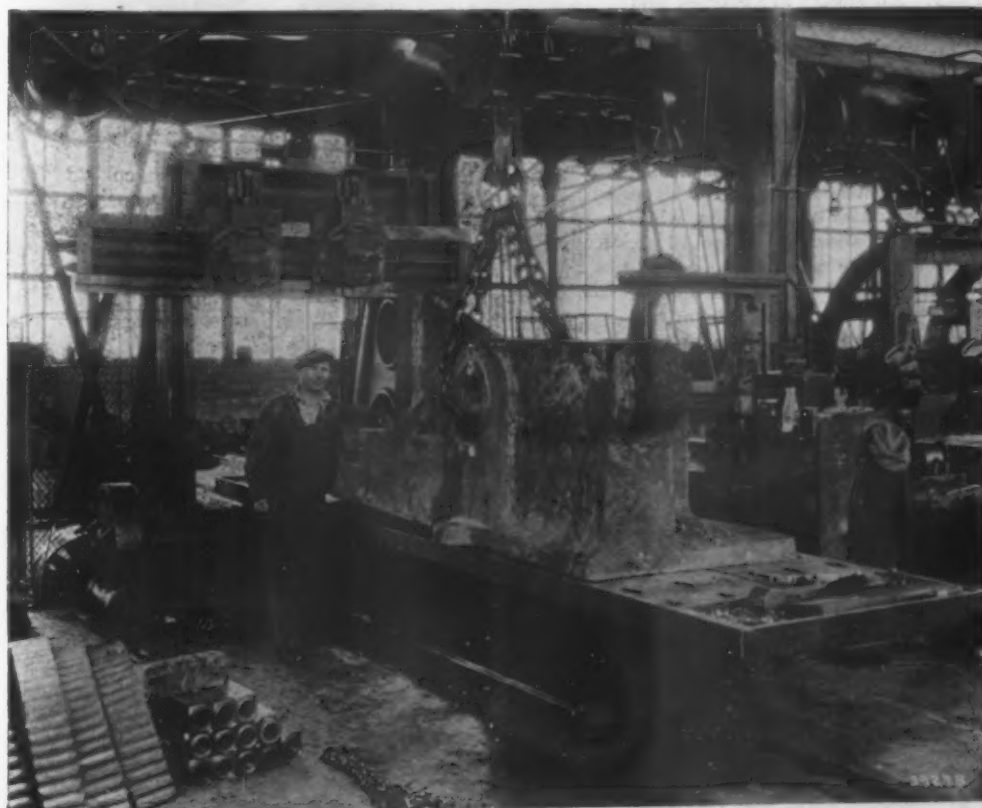
The second operation is the planing of the bearing surfaces on the sides of the jaw and frame. This is done on a battery of five planers situated on the opposite side of the central bay. An important operation performed on the planers is the facing of the rubbing block on the frame and the rubbing pad on the jaw of the shear. This work must be accurate because the rubbing pad and block serve to keep jaw and frame in alinement during shearing. The rubbing block is attached to a rubbing post on the frame, while the rubbing pad is a steel stud cast on the jaw.

Beyond the battery of planers is a 100-in. Niles-Bement-Pond Co. vertical boring mill on which the shear gears are faced. This mill is used also to face

the hub of the flywheel. Drilling oil holes and seats for grease cups is done by a 4-ft. radial drill, also located on one side of the middle bay. This machine likewise finishes out the bolt holes in the castings.

The main pins for the larger shears are turned on two large lathes, one of them a 50-in. x 20-ft. Fifield and the other a 24-in. x 14-ft. New Haven machine. Keyways are put in pins, crankshafts and countershafts by a keyseating machine. Various accessories are machined on smaller tools in the side bays. Here small pins and crankshafts are turned, connecting arms are planed, shaped and drilled, pinions are cut, take-up shoes for the main pin bearing are machined and flywheels are balanced.

Blades for the shears are bought sharpened and heat treated. No tolerance is permitted in the thickness of the blades, as it is a cardinal rule of the company's manufacturing practice that there be no shimming between blades and jaw or frame. Pulleys are



A 7½-Ton Shear Base Being Placed on a Planer





Battery of Planers Arranged on One Side of the Middle Bay

pressed steel and require no machining. Countershafts require no work other than sawing to length and putting the keyways in. Crankshafts must be turned down at the ends.

The main pins connecting jaw and frame are of 0.45 per cent carbon forged steel. The pins are of two types—one the ordinary plain pin and the other tapered and graduated to permit its easy removal from the housings. The forgings are bought rough-turned within about  $\frac{1}{8}$  in. of the finished diameter at the large end of the pin. The largest pin used has a diameter of 15 in. at the large end and is graduated down in steps to  $12\frac{1}{2}$  in. at the small end, that being the diameter of the threads on which two nuts are screwed after the pin has been inserted in the housings. The nuts have a diameter of 15 in., the same as that of the head on the other end of the pin. One nut acts as a lock on the other, and when they are pulled tight keyways in both of them must coincide with a keyway in the pin, so that a key may be inserted. This requirement makes accurate machining and tapping imperative. Wear in the bearing in the housing is corrected by take-up shoes fastened underneath the end nuts and the head on the other end of the pin.

Assembling operations are performed at the shipping end of the central bay. All shears are erected and tested before being shipped. The larger machines, because of their size, must be dismantled again before they are loaded on cars. Loading is done by overhead crane, and cars are switched into the plant on a spur from the Chicago, Milwaukee & St. Paul Railroad. Erection alone takes from 15 or 20 hr. up to 40 or 50 hr. for the largest machines. The major machining operations on the shear parts also take considerable time. Ten hours are required on the horizontal boring mills, while the planing of jaw and frame takes from 14 to 16 hr.

An important operation before assembling is the babbitting of the pin bearings. For this purpose a babbitting bench has been provided at one side of the erecting floor. To hold the babbit constituting the bearing for the main pin, flanges are provided on the bore of the jaw and frame. Next to the erecting floor in one of the side bays is a stores department, where spare parts used in assembling are kept.

Of brick and fabricated steel construction, the plant measures 90 x 205 ft. over all. The middle bay is 45 ft. wide, and the side bays approximately 20 ft. each. The building is heated by a warm blast system. Coils from a hot-water heater are arranged in a hot-air chamber from which the heated air is blown through pipes by motor-driven fan. The pipes are hung from the columns separating the middle and side bays and have openings at intervals for the ejection of heated air. Owing to the traveling crane, the piping could not be hung across the middle bay; accordingly a concrete conduit was laid under the floor to connect the hot air chamber with pipes serving the farther side of the building.

In addition to its production work, the company also handles shear repairs. Likewise it carries a

large stock of blades as well as other spare parts, not only at its Milwaukee plant, but also at large distributing centers in other sections of the country.

The Cecil R. Lambert Co., Inc., Detroit, manufacturing engineer, has just completed the conveyor chain for the new Studebaker closed body plant at South Bend, Ind. The chain is nine miles in length, or four and one-half miles of actual conveyor system. The conveyor is equipped with steel lugs which fasten on the material placed on the conveyor and carries it to its destination, thereby eliminating racks with a saving of man power and floor space.

The Lindell Die Co., Lansing, Mich., has been operating at capacity for some time past and is anticipating a continuance at this rate after the first of the year. Forging operations will start in the company's new forge plant about the first of December.



Balancing a Flywheel—One of the Operations Performed in the Side Bays

# Side-Blast Cupola in Operation at Chicago

Schuermann System, Installed for First Time in America, Is Described by  
Dr. S. G. Werner, Head of German Foundry Association—Other  
Developments in German Foundry Practice Discussed

THE Schuermann side-blast cupola, the first American installation of which was recently completed at the Sacramento Square plant of the Griffin Wheel Co. at Chicago, was the main topic of an address on "Modern Practice in Gray Iron Foundries in Germany," delivered by Dr. Siegfried G. Werner, Duesseldorf, Germany, at Chicago, Nov. 10. The meeting took place at the City Club in that city under the auspices of the Chicago Foundrymen's Club, following a public demonstration of the cupola during the day to which all interested foundrymen were invited.

The first melt was taken from this cupola on Oct. 12, and tappings have been taken practically every other day since. While the operations thus far have been of an experimental nature, results achieved indicate a saving of 20 per cent in fuel consumption and several points in the sulphur content of the melt over what has been possible with the common type of cupola. Whereas in ordinary practice the amount of coke used is fully 10 per cent of the charge, coke consumption has been reduced to 8 per cent through the use of the Schuermann installation.

The Schuermann system was described in an illustrated article, translated from *Die Giesserei*, which was published in *THE IRON AGE*, Oct. 19, 1922, page 991. In his address at Chicago, Dr. Werner, who holds the patents on the cupola and incidentally is president of the German Iron Foundries Association, gave a more complete exposition of its construction and operation, laying emphasis on its outstanding features. Invented by E. Schuermann, Dresden, Germany, now a man of 71, the cupola, in Dr. Werner's opinion, constitutes the first important forward step in melting practice since cupolas were introduced in iron foundries.

The prime distinguishing characteristic of the cupola is the side blast. The windbox encompassing the combustion zone is divided in half and the blast is driven alternately through a double row of tuyeres on one side while the gases are drawn out through a similar row of tuyeres on the other side. At given inter-

vals, usually ranging from 5 to 15 min. according to the rate of melting desired, the direction of the blast is reversed. The cupola described in *THE IRON AGE*, Oct. 19, 1922, and the one recently installed at the Griffin Wheel Co. plant both utilize the waste gases to preheat the blast but, according to Dr. Werner, the principle of the side blast may also be used advantageously without the preheating chambers. Even though the heat of the gases is not conserved, the side blast still makes for fuel economy through restriction of the melting zone to the section of the cupola through which the cross-currents of air pass.

Various modifications of the side blast just described have been successfully tried both with and without the preheating chambers. One of them calls for a double alternation of the blast as follows: First the blast is introduced through the lower tuyeres on one side of the windbox while the gases are ejected from the upper tuyeres on the other side; then the blast is passed through the upper tuyeres while the gases find exit through the lower tuyeres on the opposite side. The operation is then repeated, using that half of the windbox which had previously been utilized for the withdrawal of gases (through alternate rows of tuyeres) for the injection of the blast. The advantage claimed for this scheme is that, instead of carrying the blast straight across the combustion zone in two distinct currents, it tends to diffuse the oxidizing action of the air by means of the alternately upward and downward diagonal blasts. A further elaboration of this scheme, used, however, principally in starting the cupola, is to introduce the blast simultaneously from both sides of the windbox, the cross currents being alternately from the lower tuyeres to the upper tuyeres diagonally opposite and vice versa. This gives the blast a weaving motion, mixing the air with the gases of combustion so that the heat given off by the latter promotes the reaction of the oxygen in the air with the coke. These variations in the application of the side blast principle were mentioned chiefly to indicate the

DR. SIEGFRIED G. WERNER, who addressed the Chicago Foundrymen's Club on Nov. 10, has been president of the German Iron Foundries Association for the past 11 years, and from 1915 to 1919 was also president of the German Steel Foundries Association. He is likewise a member of the executive board of the German Iron and Steel Institute, and a member of the chamber of commerce of Duesseldorf. He was born at Bremen in 1878 and, after obtaining an engineering degree at college, came to the United States for practical training in the steel mills and incidentally for the purpose of learning English, which he now speaks fluently. He was for four years in the employ of the American Steel & Wire Co., and during that time rose from wire drawer to chief engineer in charge of the rebuilding of the Newburgh plant at Cleveland, after inventing a link for binding woven wire. Dr. Werner is the main stockholder in four foundries in the section of Germany occupied by the French. The *Stahlwerk Werner* at Erkrath, near Duesseldorf, is equipped with electric furnaces for the manufacture of thin-walled steel castings. The *Werner-huette* at Heerdt, near Duesseldorf, is a gray iron foundry; the *Eisen und Stahlwerk Werner* at Duellen, near Krefeld, is a machine shop and iron foundry, the foundry being used for the manufacture of machinery castings. The *Stahlwerk Oberhausen* at Oberhausen is an acid open-hearth steel foundry. He also controls the *Stahlwerk Hamburg*, now under erection at Hamburg. He is the donor of the Siegfried Werner medal, bestowed upon a foundryman each year for the most noteworthy technical or economic development.



DR. S. G. WERNER



wide possibilities for the further development of the Schuermann system.

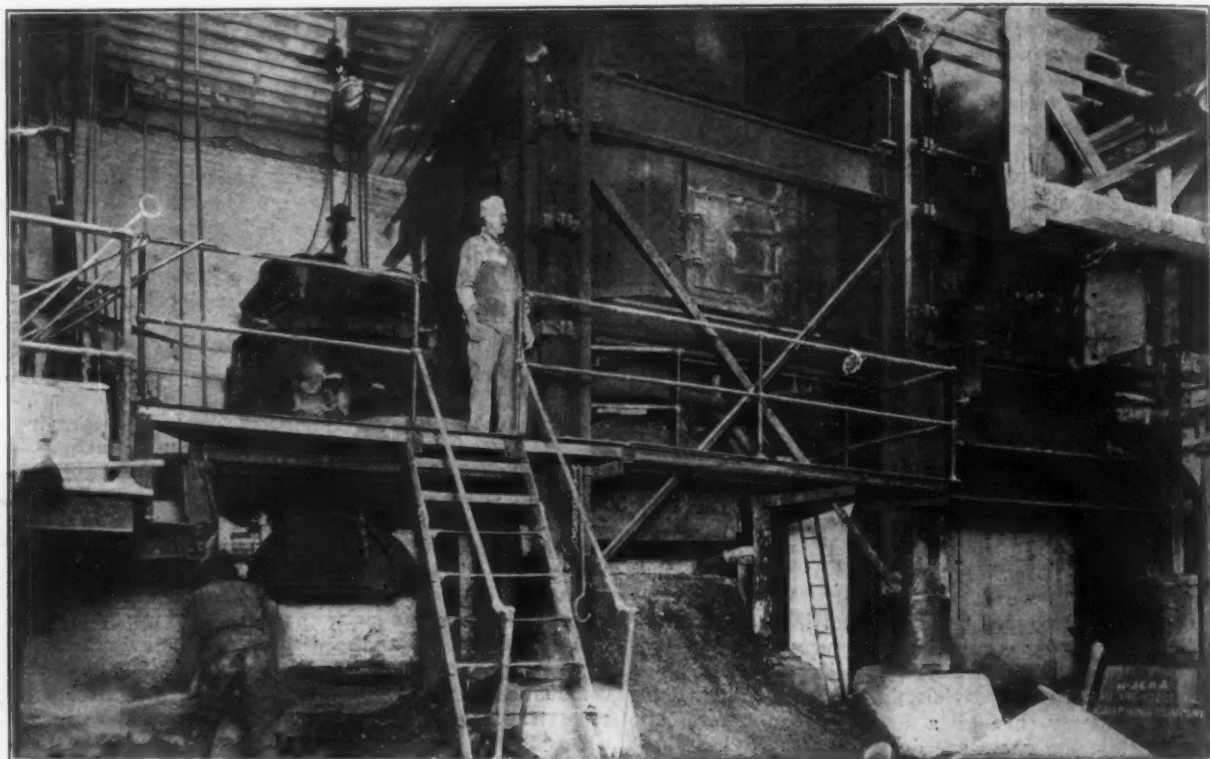
#### The Installation at Griffin Plant

The speaker's remarks, however, were chiefly focused on the type of cupola with preheating chambers which was installed in the Griffin Wheel Co. plant. There are two preheating chambers, which at the Griffin plant happen to be located on the same side of the cupola as contrasted with the installation described previously in *THE IRON AGE* where they were arranged on opposite sides. Both chambers are connected at the top with a smoke stack and a pipe leading to a blast fan. A reversing valve alternately connects one chamber with the stack and the other with the fan so that when the waste gases from the cupola are passing through one chamber the blast is being driven through the other. At the Griffin plant a motor-driven suction fan has also been provided so that, concurrently with

losses through dissipation at the top of the stack.

Particular stress was placed by Dr. Werner on the more complete combustion which, it is claimed, has been made possible by the side-blast principle. Practically no carbon monoxide is present in the cupola or in the preheating chambers, the carbon monoxide being oxidized into carbon dioxide as rapidly as it is generated. In fact, to reduce further the possibility of the generation of carbon monoxide, the cupola at the Griffin plant embodies a slight modification of the original Schuermann design. A small flue connecting the two halves of the windbox on either side of the cupola permits the passage of sufficient preheated air to oxidize any carbon monoxide issuing from the cupola to the preheating chamber.

The most striking feature of the Schuermann method is the saving of fuel which, for average foundry practice, is fully 25 per cent, according to Dr. Werner. Moreover, the sulphur content of the melt is diminished



The Preheating Chambers Are Located Back of the Cupola, Being Connected With the Cupola by the Windbox to Be Noted to the Right of the Workman. At his rear to the left is a forehearth, rarely used in this country but standard on fully 30 per cent of the cupolas in Germany

the driving of the blast through a chamber to the cupola, the gases are mechanically exhausted through the opposite chamber. The chambers contain a large number of vertical flues constructed of brick so that a maximum of brick surface has been provided for the alternate absorption of heat from the gases of combustion and radiation of heat to the incoming blast. The effectiveness of the preheating is indicated by the fact that whereas the blast enters the cupola at an average of 800 deg. C., gases leave the stack at the low temperature of 150 deg. C. (1475 and 300 deg. Fahr.)

While there is sufficient radiation from the melting zone to warm up the down-coming charge, there is never a flame at the top of the cupola. In fact, one can hold his hand over the top of the charge without discomfort. The low temperature at the top of the cupola, Dr. Werner pointed out, will facilitate the use of center charging machines.

#### Advantages Summarized

In summarizing the advantages of the Schuermann system, the speaker made the following claims for it: A material saving in fuel consumption, a reduction in the sulphur content of the iron, longer life for the cupola lining, greater flexibility in the rate of melting, hotter iron at the tap hole and the elimination of heat

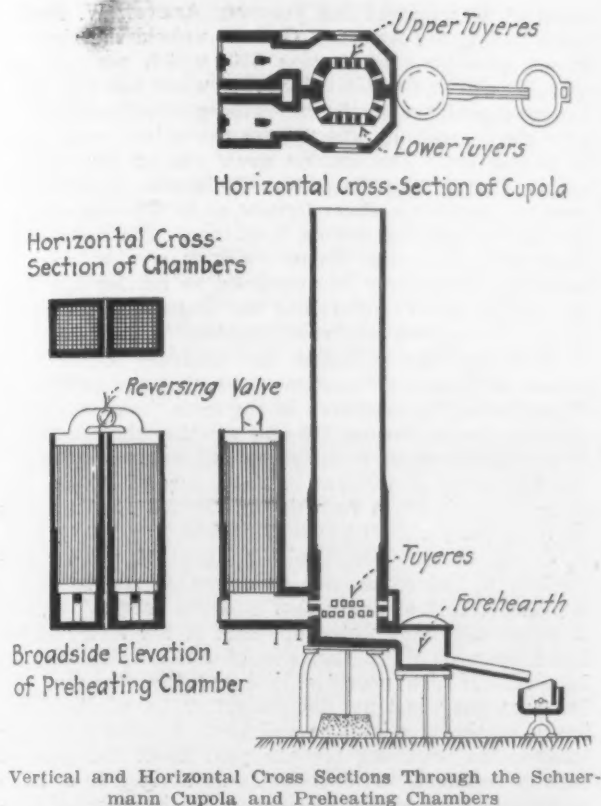
at least 25 per cent. Inasmuch as the melting zone is kept much lower than is usual with a common type of cupola, it is possible to line the stack with iron bricks down to a comparatively short distance above the tuyeres. Experience in the various foundries in Europe using side-blast cupolas indicates that the Schuermann principle allows a much wider variation in the melting rate during melting periods; one large foundry, for instance, starts with an output of six tons in the first hour, runs the cupola up to 15 tons in the next hour, and then slackens to five tons per hour as the end of the melting period approaches. Yet, notwithstanding the sharp changes in the rate of melting, the composition of the molten iron remains constant. The life of the cupola lining in installations abroad, he asserted, has been found to be more than four times as long as in an older type of cupola. The Schuermann cupola is covered by United States patents.

#### New Foundry Developments in Germany

Digressing from his main topic Dr. Werner enumerated a number of other recent developments in German foundry practice.

**Pearlitic Cast Iron:** A new product which has recently made its appearance in his country is styled "pearlitic cast iron." This iron has a finer grain struc-





ture and a higher bending deformation than ordinary cast iron, and is commended particularly for its greater wearing qualities. By way of illustration the speaker exhibited a number of diagrams and photomicrographs, showing the grain of "pearlitic cast iron," and the importance of high temperature of the molten iron when pouring. [This was described and discussed in THE IRON AGE, Aug. 16, Sept. 6 and Sept. 27, 1923.]

**New Acid-Resistant Iron:** As another feature of modern European iron foundry practice, Dr. Werner referred to the different inventions of Mr. Walter, of Nuremberg, Germany. Mr. Walter has developed an entirely new way of producing acid-resistant castings. The patent rights of this method are in the hands of the Krupp company, at Essen, and it is supposed that one or several large foundries in the United States will very soon be using the new method. In making his acid-resistant castings, Mr. Walter makes use of the reaction which takes place between silicon and iron when these materials are heated together to a temperature of about 1150 deg. C. (2100 deg. Fahr.) The reaction which then takes place is accomplished by the development of a very high temperature—more than 3000 deg. C.; the reaction is exothermic. The fluid mixture of silicon and iron, containing 40 per cent of silicon, is entirely homogeneous. It consists of iron silicides. The grain structure is very fine, and there are no graphite particles showing the break. With all the other methods used heretofore for making acid-resistant iron castings, the ferrosilicon is added to the molten iron, but in that case it is impossible for the silicon to go into solution, because the melting point of silicon is higher than the melting temperature of the iron. By Mr. Walter's method, the most complicated castings can be made without the slightest difficulty.

**Boron in Cast Iron and Steel:** Mr. Walter has given much of his at-

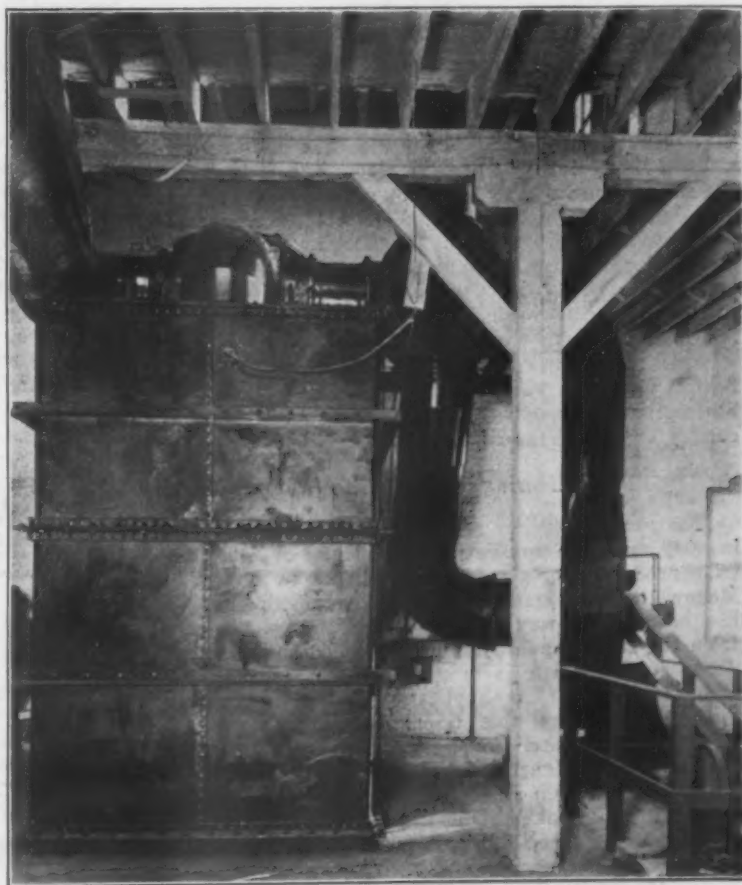
tention also to the addition of boron to cast iron and cast steel. His work in this line has been covered by a large number of patents, and, though it has not been possible to put all of his ideas into practical use, the results which have been obtained by the addition of boron to molten cast iron and cast steel seem to be of the greatest importance. It appears that Mr. Walter has discovered entirely new ways of influencing the formation of the structure in iron and steel. At the same time, boron will enable foundrymen to make cast iron which can be hardened in a very simple manner. In steel foundry practice, boron may aid in obtaining a fine grain structure without annealing.

**Synthetic Pig Iron from the Cupola:** Recently Mr. Walter has devoted much of his attention to the production of synthetic pig iron out of the cupola; he has had remarkable success at one of the larger foundries in Germany, and it is probable that this new way of producing pig iron will become of interest for the foundries in the United States also.

Concluding, Dr. Werner gave a description of the new Fiat electric melting furnace that has been designed by Cavalliere Massera, of the Fiat Works in Torino, Italy. The first furnace of this type in Germany will be installed at one of the works of Dr. Werner, and he expects that the entire cost of the installation will be repaid within six months by the savings which the Fiat furnace will show in comparison with other familiar furnaces.

The address was illustrated with a number of photographs, tables and curves.

An election will be held in Marquette, Mich., Dec. 3 to decide whether the city will issue \$325,000 of bonds for an auxiliary generating plant and for the construction of a hydroelectric plant.



The Chambers Are Connected at the Top to the Smoke Stack and the Blast Fan. A reversing valve is situated in a central position directly above the chambers. The pipe leading to the left connects with the blast fan; the pipe passing to the right connects with the stack. A connection with an exhaust fan (visible at the right) has been cut into the connection between the chambers and the smoke stack. A hand-operated valve located at this point enables one to operate the chambers with or without the use of the suction fan which, obviously, promotes the escape of the gases from chamber to stack

## TARIFF PROBLEMS

### Commission Uncertain in Regard to Making Investigation Abroad—Attorney General Renders Decision

WASHINGTON, Nov. 20.—No determination has been arrived at by the Tariff Commission as to when it will begin investigation abroad of pig iron costs under the application of Eastern merchant blast furnace interests. The inquiry, instituted under the flexible provision of the tariff act, has been completed in the United States. The commission also is undecided as to when it will proceed to make a general investigation of the steel situation abroad. Its original purpose was to carry on the two inquiries simultaneously and it may yet do this. Conditions in Europe, however, are so disturbed and economic factors so changeable through the fluctuation of exchange and other elements, that there is a question in the minds of members of the commission as to the constructive results that might arise from such an inquiry under prevailing conditions.

Producers in the iron and steel trade have urged the commission to proceed with the general inquiry, despite existing European conditions. Apparently it is their desire that this be done as a matter of obtaining information as to the iron and steel situation from a market and other points of view rather than from a tariff standpoint. It is conceded that there is a general lack of specific information of costs of production of both iron and steel in foreign manufacturing countries, and that information of this character would be helpful at this time to Americans. The general steel inquiry, if instituted, would be done upon the initiative of the commission as distinguished from the inquiry regarding pig iron specifically, under the flexible provision upon application of eastern pig iron makers.

#### Several Resignations

Paul M. Tyler has resigned as chief of the Metals division of the commission, and F. Morton Leonard is acting chief pending selection of a permanent head by the commission. John L. Bray also has left the services of the commission as non-ferrous expert to accept the chair of metallurgy in Purdue University and has been succeeded by Myron R. Walker, formerly associated with H. Koppers in Pittsburgh. Mr. Walker is a graduate of the Michigan College of Mines, Houghton, Mich., and has had 20 years' experience in mining and metallurgical work in the United States, Canada, South America and Central America.

The inquiry into the cost of Swiss files under the flexible provision, having been completed in the United States, now is under way in Europe by Paul M. Hermes, cutlery expert of the commission.

#### Hearing on Magnesite

The commission has set Dec. 5 as the date to begin hearing upon the application of a group of four Austrian producers for a reduction in duties on magnesite. Meanwhile investigation into the magnesite situation has been under way in the United States. Reports from the trade tend strongly to uphold the claim that American magnesite is in every respect equal to foreign magnesite. The application of foreign makers made the assertion that their product is superior to American magnesite. Among those who are expected to appear at the magnesite hearing on behalf of domestic makers are Nelson B. Franklin of the Northwestern Magnesite Co., maker of dead burned magnesite; C. S. Maltby, San Francisco, producer of both dead burned and caustic magnesite, and a representative of the Sierra Magnesite Co.

#### An Important Decision

Interest in some of the stringent provisions of the Fordney-McCumber tariff act has been heightened by a decision of Attorney General Harry M. Daugherty which was announced last week. Acting upon the re-

quest of Secretary of the Treasury Andrew W. Mellon for a ruling, the Attorney General upheld the right to invoke provisions of Section 510, which prohibit importations into the United States when the manufacturer or producer of the imported products refuses to give the appraising officer information as to the cost of production. The opinion grew out of the refusal of the Singer Mfg. Co., Ltd., Clydebank, Scotland, to give an appraising officer figures as to the cost of production of imported sewing machines. The appraising officer had asked for the information so that the imports might properly be appraised as neither the foreign value, export value, nor the United States value of the merchandise was ascertainable.

Secretary Mellon asked the Attorney General to advise the Treasury Department whether the term "cost of production" is embraced in the term "market value" provided for in Section 510 and whether the Secretary of the Treasury, in making regulations under Section 484 (g), would be justified in the failure of a manufacturer or producer to furnish the verified statement in invoking the provisions of Section 510.

Citing Section 402, providing that if neither the foreign, United States nor export value can be ascertained, the cost of production must be ascertained, the Attorney General pointed out that if the latter is refused the prohibitive provision of Section 510 may be invoked. It also provides that the Secretary of the Treasury may instruct the collectors to withhold delivery of the merchandise and that if failure to give information continues for one year from the date of such instructions, the collector is authorized to sell the merchandise at public auction as in the case of forfeited merchandise.

"In order that the cost of production may satisfactorily be obtained," said the Attorney General, "the proper customs officer may inspect the books and records of the manufacturer or producer. Should this privilege be denied him, however, the provisions of Section 510 of the tariff act may be invoked."

### Bookings of Steel Castings in October

WASHINGTON, Nov. 19.—The Department of Commerce announces that October bookings of steel castings, based on reports from principal manufacturers, and representing over two-thirds of the commercial-castings capacity of the United States, amounted to 37,446 net tons, as against 47,574 tons in September. The following table shows the bookings of commercial steel castings for the past 10 months by 65 identical companies, with a monthly capacity of 96,900 tons, of which 38,300 tons are usually devoted to railway specialties and 58,600 tons to miscellaneous castings:

| Month,<br>1923  | Total          |          | Railway<br>Specialties |          | Miscellaneous<br>Castings |          |
|-----------------|----------------|----------|------------------------|----------|---------------------------|----------|
|                 | Per Cent<br>of |          | Per Cent<br>of         |          | Per Cent<br>of            |          |
|                 | Tons           | Capacity | Tons                   | Capacity | Tons                      | Capacity |
| January . . .   | 100,605        | 103.8    | 47,879                 | 125.0    | 52,726                    | 90.0     |
| February . . .  | 90,152         | 93.0     | 39,845                 | 104.0    | 50,307                    | 85.8     |
| March . . . .   | 143,564        | 148.2    | 76,409                 | 199.5    | 67,155                    | 114.6    |
| April . . . . . | 90,968         | 93.9     | 39,610                 | 103.4    | 51,358                    | 87.6     |
| May . . . . .   | 89,493         | 92.4     | 38,788                 | 101.3    | 50,705                    | 86.5     |
| June . . . . .  | 84,878         | 87.6     | 42,773                 | 111.7    | 42,105                    | 71.9     |
| July* . . . . . | 52,066         | 53.7     | 16,741                 | 43.7     | 35,325                    | 60.3     |
| August . . . .  | 50,515         | 52.1     | 18,332                 | 47.9     | 32,183                    | 54.9     |
| September . .   | 47,574         | 49.1     | 21,685                 | 56.6     | 25,889                    | 44.2     |
| October . . . . | 37,446         | 38.6     | 9,840                  | 25.7     | 27,606                    | 47.1     |

\*Two companies with a capacity of 735 tons per month on miscellaneous castings now out of business.

### New Glycerin-Water Quenching Medium

In connection with an investigation by the Bureau of Standards of steels for the manufacture of precision gages, an effort has been made to find a quenching medium intermediate between oil and water. During the past month, quenching curves were taken of specimens cooled in water solutions of glycerin. Such solutions fill the gap effectively, so far as the cooling rates at high temperatures are concerned.



## BRONZE-STEEL WELDS

### Variations in Microstructure with Rods of Different Compositions—Peculiar Behavior of Phosphorus

BY GEORGE F. COMSTOCK\*

IN the course of some work on bronze welding rods for metallic-electrode arc-welding, the deposits of bronze made in this way on steel were examined with the microscope. The structures found in some instances were rather peculiar, and are of sufficient interest to warrant a brief description with some illustrations.

cracks however occurred in the steel, extending downward from the weld, and these were filled with the bronze, thus forming a certain amount of interlocking between the two layers of metal. As a matter of fact, it was found to be impossible to split the two layers apart, in spite of the apparent lack of alloying. Fig. 1 shows a typical boundary between steel and the deposited bronze without phosphorus, with one of the irregular bronze-filled cracks in the steel.

When the welding was done in the same way but using bronze containing 1 per cent of phosphorus to increase its fluidity and hardness, there was a distinct layer of alloys between the bronze and the steel. The alloy present in greatest amount appeared to be the iron phosphide eutectic, as illustrated in Fig. 2, where the typical globular structure of this eutectic is promi-



Fig. 1

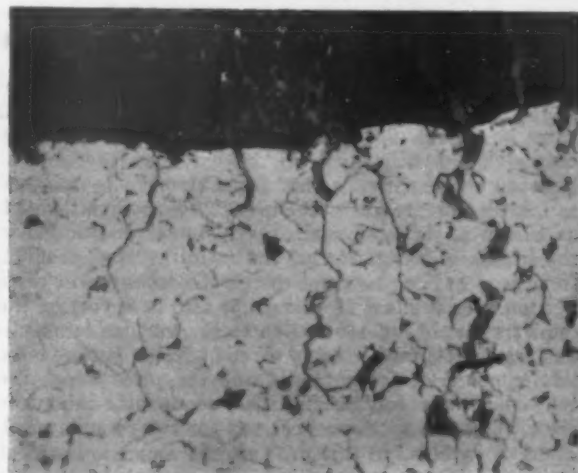


Fig. 4

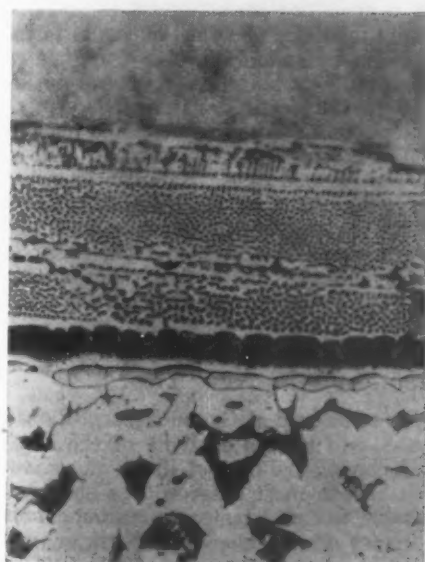


Fig. 2

Fig. 1—Boundary Between Deposited Bronze Without Phosphorus (above) and Steel (below), Etched with Picric Acid and Magnified 400 Dia., Showing no Alloying but Bronze-Filled Cracks in the Steel

Fig. 2—Boundary Between Deposited Bronze with Phosphorus (above) and Steel (below), Etched with Picric Acid and Magnified 1000 Dia., Showing Phosphide Eutectic and Layer of Dark-Etching Constituent, Possibly Troostite, Between Bronze and Steel

Fig. 3—Thicker Alloy Layer in Specimen Similar to Fig. 2 but Magnified 400 Dia., with More of the Dark Constituent, and Some Particles of Alloy in the Bronze

Fig. 4—Same Specimen as Fig. 3, Etched and Magnified in Same Way, Showing Bronze-Filled Cracks in the Alloy and the Steel Base



Fig. 3

The steel used in this work was ordinary rolled soft steel such as is made for plates and sheets. The bronze was in the form of thin cast rods, and contained about 10 per cent tin, the balance being copper except for 1 per cent of phosphorus which was present in some of the rods. These rods served both as electrodes and as sources of metal to be deposited in welding. The welding was done in the research department of the United States Light & Heat Corporation.

The microscopic examinations were made of the boundaries between the deposited bronze and the various pieces of steel to see what kind of a union was formed and what were the prospects for its stability and permanence. When bronze without phosphorus was used, the boundary between steel and bronze was sharp, no alloying whatever being apparent. Irregular

Between the eutectic and the steel however there are rows of two other constituents, one etching very dark with picric acid, and one consisting of elongated light-etching grains. The nature of these substances is not known, but it may be that the darker one is troostite. In Fig. 3, where the steel base appears only in the lower left corner, a broader band of phosphide eutectic is seen, with globules of the dark-etching constituent scattered through it instead of lying only next to the steel. Particles of eutectic and the dark constituent are also shown scattered through the deposited bronze above the alloy layer. Fig. 4 is another view of the same weld, showing chiefly the steel base, with a thick layer of the dark constituent above it, and several bronze-filled cracks extending through this layer and the steel. These cracks are smaller than those shown in Fig. 1, but are probably of an exactly similar nature.

In spite of the layer of eutectic, which might be

\*Metallurgical engineer, Titanium Alloy Mfg. Co., Niagara Falls, N. Y.



expected to be brittle, between the bronze and steel, the two metals in these specimens, as in the case noted above, could not be separated from each other mechanically. It seems remarkable that during the extremely brief period of fusion in this process of welding there should be time for the reaction between the phosphorus of the bronze and the iron in the steel, to form such a distinct layer of eutectic with the other constituents

that have been described. Apparently the affinity of phosphorus for iron is considerably greater at high temperatures than its affinity for copper.

The writer desires to express his appreciation to E. Bauer of the United States Light & Heat Corporation at Niagara Falls for preparing the welded specimens, and to A. B. Wilson for help with the metallographic work.

### Proposed Freight Rate Index

WASHINGTON, Nov. 20.—Study of freight rates aimed at the construction of a freight rate index showing the movement of rates on all important commodities from 1900 to the present time has been undertaken by the Research Council of the National Transportation Institute. This work has been taken up along with a broad survey of transportation subjects.

At present the staff of the Research Council is engaged in the preparation of index numbers for freight rates on wheat, flour, cotton and coal. Within a few weeks the investigation will be extended to cover at least 40 commodities. This index number is designed to include the freight rate on each commodity through each step of its movement from point of production to the ultimate destination of the manufactured product. It is proposed to show not merely the changes in rates per ton over the last 23 years, but also to apportion the total freight bill of the nation to the various commodities. It will afford a basis of comparison between the total amount of freight paid and the price which the consumer pays for the finished commodity and the price which the producer received for the raw material. There is involved in this problem the apportionment of freight rates on various kinds of material used in the process of manufacture and in the assembling of the finished product. The index will furnish a basis of exact information, it is stated, upon which to base conclusions as to the relative burden of freight rates which each industry bears of the total freight bill.

### Dry Abrasive for Sandblasting

Handling abrasives in sandblasting is discussed in a monograph prepared by D. L. Harris, assistant sales manager W. W. Sly Mfg. Co., Cleveland, as follows:

It is very important that sandblast abrasives be perfectly dry so that they will flow without clogging. Drying devices, such as stoves, V-shaped hoppers with gas burners along the sides, or steam coils under screens or perforated plates, are used in many instances where it is impractical to store the sand in extraordinarily dry bins. The operation of such sand driers is based upon the familiar fact that wet sand is adhesive and clingy, but that when perfectly dry, it runs almost without friction. As the sand near the hot metal is dried, the surface tension in the wet sand is destroyed and it drops in a dry state to a storage container, ready for use.

Metallic abrasives are more difficult to handle. They must be kept dry, as the slightest dampness will cause oxidation and the forming of a mass of lumps of considerable hardness. Such a condition would entirely prevent the use of the materials as abrasive for sandblast purposes.

Compressed air which furnishes the force for expelling abrasive at high velocities through the sandblast nozzle always contains more or less moisture. Water separators are used successfully for removing this moisture but it is impossible to make the air perfectly dry. Interruptions of several hours in the operation of sandblast equipment may cause a caking of the abrasive due to the accumulation of moisture from the compressed air, which is more pronounced with metallic shot or grit than with sand, however.

A sandblast equipment with pneumatic elevation and separating system overcomes the difficulty to a degree not realized by many users of this design. The pneumatic elevation lifts and returns the spent abrasive to the sandblast tank by means of the air used for ventilation of the equipment. This operation,

found generally in combination with a pneumatic separator, by its very nature, mixes and separates all grains of the abrasive, and removes moisture so that the abrasive is kept in prime condition.

Since caking is more pronounced with metallic abrasives, the pneumatic handling for elevation and dust separation offers a valuable remedy to what otherwise must be an expensive and exasperating condition.

### Tests of High-Speed Steels

Two series of tests on high-speed steels have been completed by the Bureau of Standards and a third has been outlined. The program for this work includes performance comparisons of commercial high speed steels in cutting carbon, nickel, chrome-nickel, chrome-vanadium, and chrome-molybdenum steels, heat-treated in various ways. The lathe tools are now being prepared, and several manufacturers of structural steel have promised to supply sufficient material for the required test logs. It is hoped to carry out the work in such a manner as to throw some light on the ease of machining various alloy steels, heat-treated to show equal hardness.

A set of high-speed steels of special composition is also being prepared in the high frequency induction furnace, as it is planned to test steels having quite different chemical composition from present commercial types, to determine the effects of added elements to the usual chrome-tungsten-vanadium steels.

In order to supplement tests already carried out on "flaky" high-speed steels, thermal analyses were made of 12 samples, intentionally flaked by repeated quenching. No marked differences in the thermal arrests were observed except in one case. Samples quenched three times from either 1260 or 1350 deg. C. showed no evidence of the  $A_c$  transformation on reheating, whereas steel which was first quenched from either of these temperatures once, twice, or five times clearly showed this transformation at about 423 deg. C.

### Power Show in New York

The power show to be held at Grand Central Palace, New York, Dec. 3-8, will have a showing of the latest devices used in measuring the flow of fluids and gases. The instruments which in most cases will be shown at work include portable  $CO_2$  and temperature indicators.

In the flow meter group one manufacturer will demonstrate the effect of pipe fittings on fluid flow by circulating water at various rates through a section of glass pipe. In another exhibit water pumped through a venturi meter will be measured by three instruments, two recording and one an indicating manometer.

Fuel oil burners complete with controls and pumps will be displayed by several companies. One exhibitor will show a burner in action spraying water in a glass case. A boiler setting will also be displayed illustrating the method of bricking and connecting the burner and installing the air register.

Pulverized fuel equipment also may be seen.

Exports of agricultural implements from the United States during the first nine months of 1923 amounted to \$40,001,188, compared with \$19,051,718 for the first nine months of 1922. The figure for nine months this year is 30 per cent greater than the total for the entire calendar year 1922 and is only 6 per cent under the total for the calendar year 1913. Exports in September were valued at \$5,522,863.

# William H. Barr Proposes New Alliance\*

President of National Founders' Association Says Manufacturers, Farmers, Bankers and Railroad Executives Should Act in Harmony

THERE is manifest in all industrial centers a steadily increasing acceptance of the principle of open shop operation, and it is equally true that these gains have shown a corresponding weakening influence in the ranks of organized labor. I believe that this statement may be uniformly accepted and applied to most industries except the mines, the building trades and the railroads.

Unfortunately, Governor Pinchot's recent adjustment of the difficulties in the anthracite fields only served to strengthen the union control of the mines and

destroy railroad efficiency and disturb our entire economic situation.

## Help for the Farmer

The need for unskilled labor suggests consideration of the economic condition of the farmer to which a great deal of attention is being given by President Coolidge and the Congress. This is as it should be. But should it be left only to the Government to recognize his needs? Every citizen is vitally concerned with the prosperity of the farmer. It is only temporarily reassuring to note that in the last few months there has been a decided improvement in conditions and that farm crops this year will sell for approximately one billion dollars more than last year. Is there then any real solution of the recurring difficulties of the farmer? If so, it must be found in general cooperation looking to improvement in his economic situation rather than in any artificial legislation which Congress may create. The experience of the farmer has been that legislation does very little good at the moment and may do much harm in the future. To help the farmer by imposing unsound conditions on railroads or industries is neither rational nor effective. But if industry, the railroads, the bankers, and the farmers, cooperating with the Government, will plan and work together they will arrive at a condition of mutual assistance which will be of general benefit. During the period of depression now ending, many farmers, in certain sections, irritated by their necessities brought about by purely economic conditions, grasped the hand of radical politicians and by sending them to Congress thought they were help-

*IN order that we may properly apply ourselves to any political task, we should as citizens banish the often implied idea that our Government is something remote, distant and unapproachable. It is a common thing to hear our neighbors speak about "the Government" as if it were something powerful, possibly composed of superhuman men who did things in an autocratic manner. On the contrary, we should form the habit of speaking of "our Government" and of "my Government" and more thoroughly realize that we are an integral part of it.*

to increase the price of coal for domestic consumption. The settlement was as unwarranted as it was uneconomic.

That extravagant building costs directly governing ever increasing rentals are brought about by the brigandage of the building trades unions is recognized by all and denied by none. Apparently the only answer to this problem is the absolute necessity for the adoption of the open shop policy of employment in this troubled industry.

The possibility of cheaper railway transportation is again jeopardized by recent demands on the part of the brotherhoods for an increase in wages, which if granted would put them back on the unjustified and profligate scale of governmental wartime operation.

## Plans of Radicals

It is generally understood that immediately following the convening of Congress there will be a drive to amend the Esch-Cummins railroad law and to substitute for this form of legislation the untried theories of radical men antagonistic to the private operation of railroads. We believe that railroad officials are fully competent to oppose these proposals before Congress, and we doubt that congressmen will go so far astray as to disturb the present form of operation which is working out with a measure of satisfaction. The foundry industry is directly concerned in the problems facing the railroad executives, and we must not remain silent under radical attacks, which if successful would

*THE present tendency to legislate rather than to enforce is painfully apparent. Many public officials seem to believe that a new law is more desirable than an earnest effort to enforce an old one. How will any man keep up with ten thousand new laws annually? Why not have a breathing space in this kind of legislation? Every time a public official desires a new law there should be an inquiry to discover whether or not there are existing laws covering the point he has in mind and, if possible, to check the inspiration of his demand.*

ing agriculture. It was, on the contrary, a selfish attempt by these radicals to build up political preference among the discontented farmers.

## Restriction of Production by Unionism

The problem is aggravated by socialistic closed shop unionism prevailing in certain industries, where by compelling abnormal wages and limiting production they have set a fantastic standard of production cost which has limited the farmer's buying power. The standard of militant unionism is not that of fair work for fair pay; it is, instead, the enforcement of demands through intimidation. The net result is artificially to advance the price of many things which the farmer

\*Abstract of address delivered at annual convention of the National Founders' Association, New York, Nov. 21.



must buy, and to rate his own competitive labor at an absolute minimum. The standard of labor valuation set up, when possible, by the unions is an unwarranted discrimination against the farmer. The price of wheat and cotton and cattle is fixed by the law of supply and demand. The price of clothing or shoes or coal reflects the artificial price resulting from imposed union con-

paid cash, and his own work becomes a real liability.

#### The Farmer and the Manufacturer

The farmer therefore has a natural alliance with the manufacturer who with him is striving for lower costs by combatting artificial union labor prices and restricted production.

Perhaps we in industry are partly responsible because we have not gone to the farmer with our problems or invited him to bring his problems to us. It is time for us to invite a mutual alinement against the common enemy of artificial conditions and insincere advisers. The manufacturer, the farmer, the banker and the railroad executive should form an alliance. Their interests are identical. They should first understand each other, and then cooperate. In this cooperation will be a solution of the farmer's problem, and through the solution there will be a helpful condition created so far as other citizens are concerned.

Our duty as an association lies along this as well as other paths. Let it be said of us that our accomplishments are guided always by optimism, honesty and equity. In no other way is it possible to maintain our accepted standing as a dominant factor in American industrial life.

*NO man has a right to criticize the action of any Government official, who has not participated in their selection and election. The vote is the great gift of our form of Government. It is through the vote that the character of policies and the quality of legislation are determined. Every citizen should know something of political methods, and should not, because he is a party man or because of his own indifference, delegate to self-appointed bosses the right to select candidates, frequently unqualified, and yield the power to elect them.*

ditions. The industrial worker assumes no risk and receives his money immediately. The farmer on the other hand must work and often wait for months, having, in addition, the hazards of nature to compete with before he can be assured that there will be any return for the labor expended. Abnormal union wages, short hours and retarded production have demoralized agricultural labor. Further, the farmer cannot collect a fair valuation on his own labor, or that of his family, much less a reasonable depreciation on his property investment. Too often, when he sells his product, he realizes only on the labor for which he has actually

*THE policy of governmental economy has been splendidly illustrated during the past two or three years, reductions having been made in many governmental appropriations and economies effected that do not operate against efficiency. The Bureau of the Budget is doing excellent work and local political considerations must not be permitted to interfere with its recommendations.*

## SUPERPOWER IN OHIO

### Large Interconnecting Plants Under Way—Utilizing Coal at Mines the Trend

Important progress has been made in Ohio this year in developing large steam power central electric generating stations and in extending interconnecting high tension transmission lines, providing a network of lines that supply current for power and lighting for a large share of the industrial centers of the State. With these interlinking lines power produced on the Ohio River is now linked with that made on the shore of Lake Erie. While other important developments are going on in other parts of the country in utilizing the available water supply for the production of current in hydro-electric plants, Ohio appears to be leading other States in the building of steam power central stations.

Not only are the transmission lines of the large electric utilities companies in Ohio being interlocked with each other but they are also interconnected with similar lines in western Pennsylvania and West Virginia and shortly will be interconnected with other power lines in Indiana. With interconnection a plant does not have to be built of a capacity to carry its peak. Continuity of service also is the better assured by the interconnecting lines.

The plans as mapped out and partly consummated provide for the erection of plants at certain strategic points where there is both water and fuel, these plants to supplement existing power plants.

Earlier this year companies engaging in superpower development in Ohio started a building program of steam power generating plants and transmission lines involving an expenditure of \$100,000,000 and it is stated

that this entire amount will be expended by March 1, 1924. At present the network of power transmission lines cover practically all of northern and eastern Ohio and a portion of the southwestern part of the State. Power generated at Windsor on the West Virginia side of the Ohio River is carried through Canton as far north as Akron, where the transmission lines from the Ohio River connect with similar lines from the plant of the Cleveland Electric Illuminating Co. in Cleveland. The latter company's plant has a capacity of 265,000 kw.

The American Gas & Electric Co. has under construction a 250,000 kw. plant at Philo near Zanesville, Ohio, and the Ohio-Pennsylvania Electric Co. will shortly begin the erection of a plant of approximately 100,000 kw. at Toronto on the Ohio River north of Steubenville. Indicating the extent of the territory covered by some of these power service corporations, the American Gas & Electric Co. now has transmission lines extending through Canton, Newark, Steubenville, East Liverpool, Coshocton, New Philadelphia and forty smaller places.

The Ohio Public Service Co. is completing a 132,000 volt transmission line extending from Lorain to Mansfield, Massillon, Alliance and Warren, a distance of 155 miles. Current for this system will be supplied by power plants at Lorain, Warren and Mansfield. The generating capacity of this system will be more than 500,000 hp. This company is affiliated with the Toledo Edison Co., reaching out from Toledo, both being subsidiaries of the Cities Service Co. The Columbia Gas & Electric Co. has lines reaching north of Cincinnati to Hamilton and Dayton and these will be extended on to Columbus. Some of the present lines carry current at 22,000 and 66,000 volts. A standard tower for carrying 132,000 volts transmission lines that has been adopted by the Ohio Public Service Co. is 79 ft. in height and these are placed six to the mile.



# High-Pressure Steam Boilers

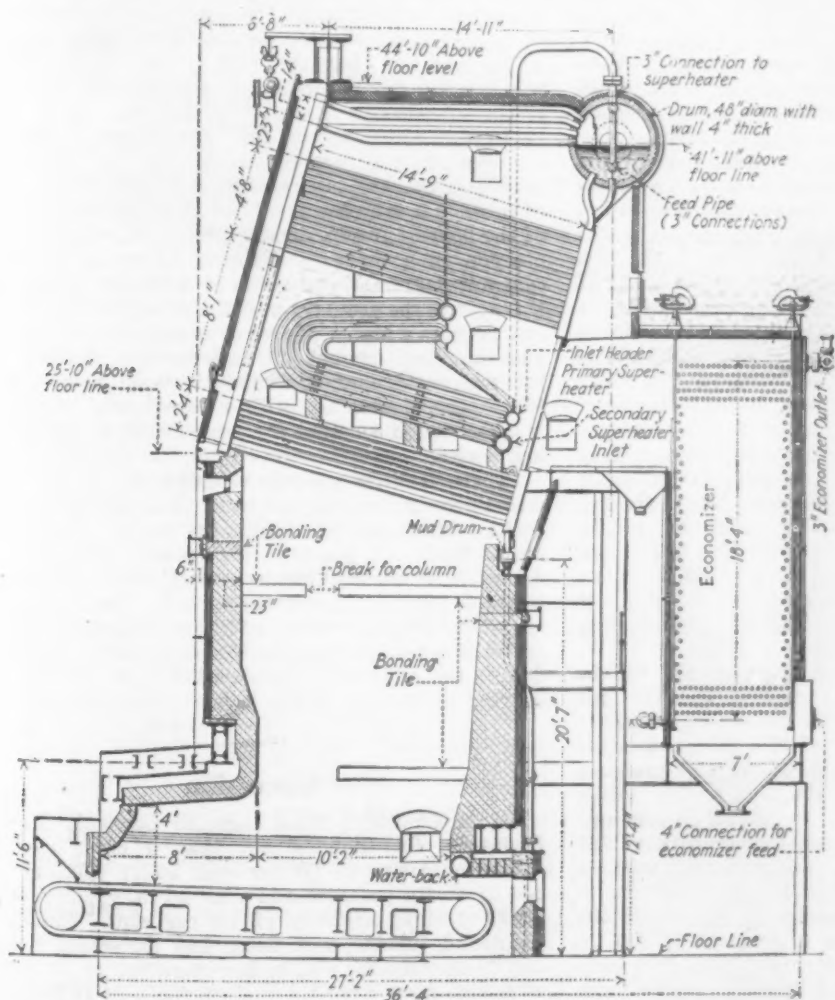
**Designed for 1200-Lb. Pressure and 725 Deg. Superheat, with Intermediate Superheating Between High-Pressure Turbine and Main Turbine Units Operating at 300-Lb. Pressure**

BY D. S. JACOBUS\*

**J**ACOB PERKINS was a pioneer in the use of high-pressure steam. In 1822, over 100 years ago, he made an apparatus in which water was heated under a high pressure in a generator kept full of water by a force pump. Only a very small quantity of the highly heated water was allowed to escape at a time into a tube, where it flashed into steam and

the lowest tier, wherein the water flashes into steam: the steam thus formed passes successively through every pipe in the lowermost range, which is exposed to the strongest action of the fire, before it enters, by a short tube, the safety chamber for the supply to the engine, to which it is conveyed by a pipe. There is a loaded valve to relieve the pressure, should the chamber become overcharged with steam.

Heating the water to 700 or 800 deg. Fahr. would



Boiler Designed for a Working Pressure of 1200 Lb. per Sq. In. The tubes are 2 in. in diameter, to facilitate cleaning. The steam drum, 48 in. in diameter and of 4-in. forged seamless steel walls, is specially reinforced at the manhole. Superheater temperature is 725 deg. Fahr., above which it is undesirable to go, because of danger of softening the steel.

passed on to an engine. His generator of 1824 is described in "History and Progress of the Steam Engine," by Elijah Galloway, published in London in 1830:

The boilers, or steam generators, are very thick cast iron bars, 5 in. square, with circular holes perforated longitudinally through them of  $1\frac{1}{2}$  in. diameter. They are arranged in three tiers and are of sufficient length to lie across the furnace, and to pass through the opposite walls, where their extremities are connected together so as to form one continuous vessel. By the operation of the forcing pump, water is continually injected into the two upper tiers of generators, so as to keep them always full, and under the pressure of the heavily loaded valve. The lowest tier of generators contain no water, but are kept at a temperature of about 1000 deg. Fahr.

At each stroke of the engine a certain quantity of water, heated to about 700 deg. or 800 deg. Fahr., is discharged into the valve box communicating with

involve operating at the critical pressure of, say, 3000 lb. per sq. in.

A series boiler was constructed by the Babcock & Wilcox Co. This consisted of a boiler with 2-in. tubes, having a steam and water drum, and a combined boiler and economizer with 1-in. tubes in which the heating surface was 3.7 times the heating surface of the other boiler. The unit was comparatively small, having 187 sq. ft. of tube surface of the boiler with the steam and water drum exposed to the hot gases, 51 sq. ft. of superheater surface and 685 sq. ft. of boiler and economized surface in the section made of 1-in. tubes, or 923 sq. ft. of heating surface in all. The boiler was fired with oil fuel with a mechanical atomizing burner and operated at 600-lb. gage pressure.

A connection, fitted with a valve and run from the steam and water drum to the lowermost part of the series boiler, was left open in starting up the boiler, so as to provide a local circulation. The unit was

\*Advisory engineer, Babcock & Wilcox Co., New York. This is abstract of a paper read before the Buffalo convention of the Association of Iron and Steel Electrical Engineers.

run at times at over 500 per cent of rating, based on the total boiler and economizer surface, and all parts were found to operate in an entirely satisfactory way. The boiler with 2-in. tubes having the steam and water drum was operated in the high capacity tests at about 1500 per cent of rating.

We are building boilers for 1200-lb. working pressure, with wrought steel economizers, for power plant service, of the general form shown, which is illustrative only, as certain features of the tube arrangement may be changed. In developing this boiler we had before us the results secured with the use of 1-in. tubes in a great number of White-Forster marine boilers for destroyer service and the results of the experiments with the series boiler.

In this new boiler the steam generating tubes are 2 in. in diameter, which is a convenient size for internal cleaning, whereas it is difficult, if not impossible, properly to clean tubes of 1 in. diameter and smaller. The steam and water drum, 48 in. internal diameter of forged seamless steel construction, provides a reserve water capacity, making it easy to operate the boiler under all sets of conditions, such as in starting up and under variable loads, and making it unnecessary to provide pumps having 100 per cent reliability, such as would be necessary for a series boiler. The tubes are arranged so that they can be thoroughly cleaned on the outside from between the diagonal lanes.

Feed water from the economizer passes directly into the boiler, which makes it necessary to build the economizer for a somewhat higher pressure than the boiler. The economizer is made up of 2-in. seamless steel tubes expanded into forged steel boxes. The boxes are spaced apart to allow the removal and replacement of the economizer tubes from between the boxes with the tubes at an angle, which allows the tubes to be removed and replaced with a relatively narrow aisle width. The ends of the horizontal circulating tubes of the boiler are bent so that they enter the drum in circumferential lines which are twice as far apart as the distance between the horizontal circulating tubes where they enter the headers. This greatly increases the efficiency of the ligaments between the tube holes. There are two circulating tubes running from the top of each uptake header to the steam and water drum. The boilers are built to meet the requirements of the A. S. M. E. boiler code. The maximum allowable stress in the drum is taken at 11,000 lb. per sq. in., thereby corresponding to the figure specified in the code.

Boilers built for 1200-lb. working pressure will be supplied with individual steam turbines. It is the idea eventually to generate all of the steam for a power plant with high-pressure units of this sort and, after passing the steam through several of the high-pressure turbines, to pass their exhaust steam to a main steam turbine. The steam supplied to the high-pressure turbines is superheated to a total temperature of 725 deg. Fahr. by primary superheaters. The exhaust steam from each individual high-pressure turbine is returned to a secondary superheater placed within the high-pressure boiler setting, at a pressure of 300 lb. above the atmosphere, and is re-superheated to a temperature of 725 deg. Fahr. and supplied to the main steam turbine. The individual high-pressure turbines therefore serve to reduce the pressure of the steam from the initial 1200 lb. to that used at the main steam turbine.

With an economical main turbine operated with the exhaust steam from the high pressure turbines the amount of power generated by the high-pressure turbines would be 20 to 25 per cent of that generated by the main turbine. Should the main turbine be run at a lower pressure than 300 lb. and at a lower temperature than 725 deg. Fahr. the gain through using the high-pressure would be increased and might reach 30 per cent or more.

There is a possibility, therefore, of revamping present power stations and considerably increasing their efficiency through using the high-pressure units with individual steam turbines and exhausting the steam into the present steam mains. To warrant the additional investment necessary for installing the high-pressure boilers in an old plant it would be necessary

to have a very steady load, or what is known as a "base load condition." The investment would not be warranted under present conditions for a widely fluctuating load.

The effect of temperature on the lowering of the elastic limit of steel has been referred to by engineers as something that might give trouble in a high-pressure steam boiler. At a temperature of about 750 deg. Fahr. the elastic limit may drop to half that obtained at room temperature and it is important that the effect of this falling off be understood. The temperature of saturated steam corresponding to 1200 lb. pressure is somewhat less than 570 deg. Fahr. At this temperature the strength of the steel is higher than at room temperature and the elastic limit is about the same or only slightly lower, so there need be no apprehension with respect to the boiler proper. The only part affected through being brought to a temperature that would cause any material difference in the strength or the elastic limit of the steel is the superheater. Of all parts of a boiler the superheater is the safest, so far as its liability to injure anyone or to cause property damage is concerned, as the worst that might happen in case the superheater became overheated would be to burn out or blow out some of the tubes, and this would not ordinarily result in any damage other than to the superheater itself.

In the latest boilers for high-pressure and high-temperature superheated steam built by the Babcock & Wilcox Co., the superheater is placed above a series of tubes in a drop-leg and below the main body of tubes of the boiler. A superheater properly arranged in this position in a properly designed boiler gives a more constant degree of superheat at different ratings than if placed in the ordinary position above the boiler tubes, and permits a higher degree of superheat to be obtained with a given amount of superheating surface. For the temperature of superheated steam now employed the superheat obtained with a superheater of this sort is near enough constant for use without an attenuating device.

There is little gain in economy in increasing the steam pressure to a higher point than 350 lb. per sq. in. without interstage heating of the steam. That is, the steam from one stage of the turbine must be withdrawn from the turbine, re-superheated and returned to the following stage of the turbine. Interstage heating necessarily involves additional complication and added expense, and the possible difficulties in operation due to the additional complication have an important bearing on the use of the higher steam pressures.

### Discussion

H. H. Chandler, steam engineer Carnegie Steel Co., Duquesne, Pa., pointed out that a cross compound engine operating at 60 per cent boiler efficiency with 150 lb. steam pressure and with 26 in. vacuum obtains a net thermal efficiency of 7.4 per cent. Similarly a compound turbine unit using 300 lb. steam pressure and 28 in. vacuum, with boiler operating at 70 per cent efficiency, gives a net thermal efficiency of 16.6 per cent. The new super-pressure boiler used as pointed out in the paper would produce a net thermal efficiency of 21.8 per cent. Comparing this with the cross compound unit, the consumption of B.t.u. per kw-hr. is cut down from 46,000 to 15,000.

Dr. D. S. Jacobus stated that air heaters for boilers will pay in connection with high efficiency units, and are bound to appear in the future. They must be used with a large and economical boiler or with an economizer, because the weight of the products of combustion, which would heat the air, is twice as great as the weight of the air to be heated.

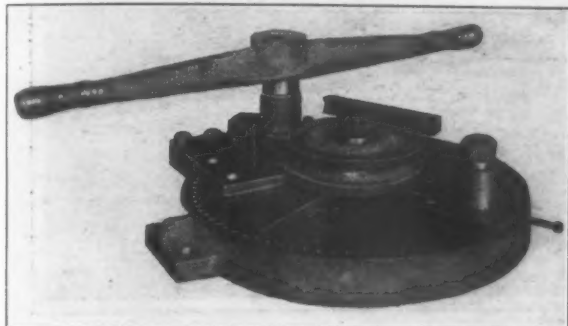
With specific reference to manholes in the 1200-lb. pressure boiler, Dr. Jacobus stated that these are made with particular care, the metal being so thickened at this point that there is greater strength here than in the other portions of the boiler. The thickness at this point, in the accepted design, reaches more than double the normal thickness of steel used in the steam drum.



### Machine for Bending Pipe and Tubes

A new machine for the cold bending of pipe or tubing of brass, copper or steel, which is claimed to operate without crimping or flattening, and which may be unloaded quickly, has been placed on the market by the Pedrick Tool & Machine Co., 3640 North Lawrence St., Philadelphia. The machine may be bolted to a stand, bench or stanchion. It is designed to handle any length of pipe, and the largest of the various sizes will take material up to 4 in. in diameter. Short pieces may be cut to length, threaded if necessary and bent to suit requirements.

The simplicity of the machine may be noted from the illustration. A face plate having gear teeth cut on its periphery is made to revolve in an outer casing. The hand-lever attached to the pinion that meshes with the face plate is said to increase the power in a ratio that requires little manual effort for operation. Attached



Machine for Bending Pipe and Thin Tubing

to the outer casing, so that it does not move with the face plate, is a flat steel piece having a number of holes for locating the resistance stud. The upright stud fastened to the face plate is radially adjustable by a set screw, and a roller is provided on this stud to reduce the friction of carrying the pipe around the form.

At the center of the machine there is another stud over which are slipped the grooved rolls of the correct size for the diameter of the material being bent, and of the proper radius for the shape desired. The degree or angle of the bend is determined by the arc through which the face plate is moved, and since this may be controlled to an exact point, any number of identical shapes may be easily made.

### Hearing of Bethlehem Merger Continued at Boston by Commission

Hearings on the merger of the Bethlehem, Lackawanna, Midvale and Cambria steel properties instituted by the Federal Trade Commission in Boston, beginning Oct. 1, were adjourned Nov. 15 till Tuesday, Nov. 22, when they will be continued in Buffalo. Among those who testified during the last of the hearings were:

Warren W. Loomis, general purchasing agent Stone & Webster, Boston, engineers; Arthur C. Harvey, president and treasurer Arthur C. Harvey & Co., Allston, Boston, iron and steel jobbers; Frank E. Colesworthy, purchasing agent Crompton & Knowles Loom Works, Worcester, Mass.; C. N. Fitts, treasurer New England Structural Co., Everett and Boston; John E. Johnson, vice-president Laconia Car Co., Laconia, N. H.; Charles Loughhead, vice-president and general manager New England Drawn Steel Co., Mansfield, Mass.; William E. Clark, Bancroft & Martin, Boston and Portland, Me., rolling mill; Henry M. Jones, Meguire & Jones Co., Portland, Me., structural steel; Louis P. Tower, president and treasurer James H. Tower Iron Works, Providence, R. I., and W. H. Fittell, Berlin Construction Co., Berlin, Conn.

Much of the testimony submitted by the witnesses above named was along the lines of that given by other users of steel mill products, namely that prior to the merger of the companies purchases were made from all; that prior to the merger the Lackawanna Steel Co. perhaps was the leader in the matter of de-

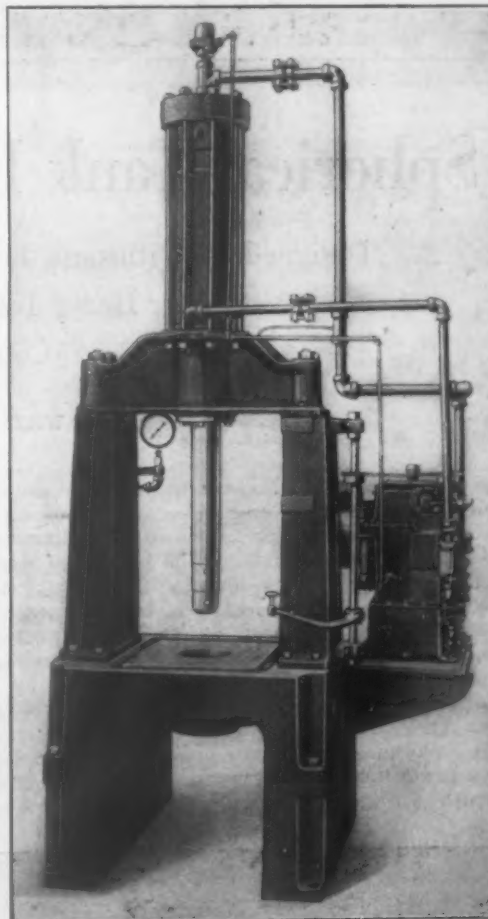
liveries; that since the merger the Bethlehem Steel Corporation has improved its deliveries; that prices made by the Bethlehem Steel Corporation are satisfactory, and that Judge Gary and Charles M. Schwab are the two leading individuals in the steel industry.

### New Self-Contained Hydraulic Press

A new line of self-contained, two-column hydraulic presses, in sizes ranging from 15 to 50 tons capacity, has been placed on the market by the Oilgear Co., Milwaukee.

The machines may be used for broaching, assembling, forming, straightening and other work where pressing action is required. One of the features claimed for the press is that the ram may be run against the work to any predetermined pressure and held at that pressure indefinitely, without pulsations. Other features emphasized by the maker include sensitive control, smooth and positive motion to the ram, elimination of accumulator and operating valves, the constant speed source of power and speed of operation.

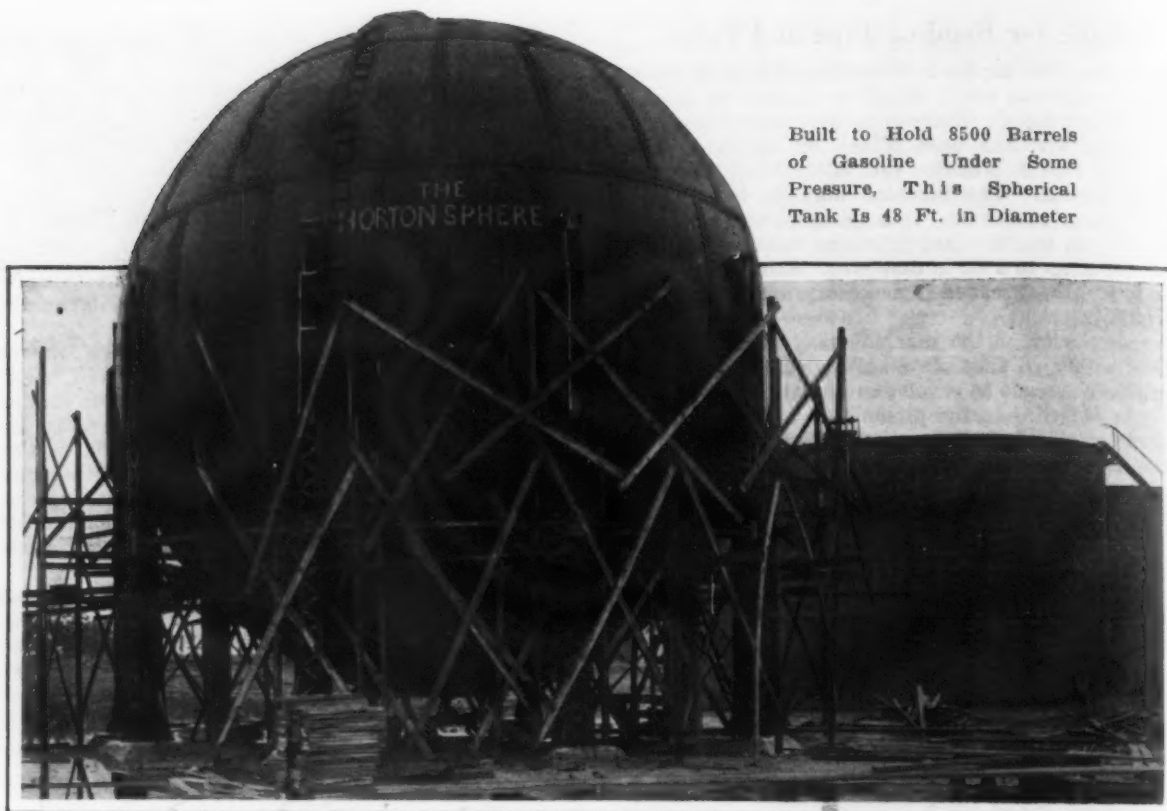
The unit illustrated is of 15 ton capacity, equipped with the company's type W variable delivery pump. The presses may be equipped with the platen either 14 or 30 in. from the floor, and with the width between the columns and the stroke of the ram dimensioned to suit requirements. The pump has a maximum delivery



Sensitive Control Is a Feature

of 3060 cu. in. per min. of oil and a pressure of 1000 lb. per sq. in. maximum.

Various pump control mechanisms are available, such as plain hand control as shown in the illustration, foot-treadle, or semi-automatic control. In all cases a single-acting lever gives instant control of the rapid advance and return of the ram, and also to the pressing speeds, regardless of the resistance offered by the work. A differential quick advance to the ram is available with either hand lever or foot treadle control, which will permit the ram to be advanced to the work at double the pressing speed. The pump is protected so that the ram may be run against a positive stop without injury.



Built to Hold 8500 Barrels of Gasoline Under Some Pressure, This Spherical Tank Is 48 Ft. in Diameter

## Spherical Tank Built for Oil Storage

Designed to Withstand Leakage and Prevent Evaporation  
Under Heavy Internal Pressure—Rigid  
Construction

BY WILLIAM C. MC CLURE

**A**T points in the Gulf, Mid-continent and Wyoming oil fields are being erected a number of large elevated spherical steel tanks, 48 ft. in diameter, designed to hold approximately 8500 barrels of gasoline. This new type of tank, invented and built by the Chicago Bridge & Iron Works, has been named the "Hortonsphere." It has been designed to withstand leakage, evaporation and an internal pressure as high as 15 or 20 lb. per sq. in. All pressures, owing to the form of the tank, must be exerted equally at every point of the interior of the shell.

It is well known that the ordinary, flat bottom, cylindrical tank tends to become distorted under pressure, which is evidenced by the bulging of the bottom

in the center, accompanied by rising of the perimeter above its foundation. The old style of tank, therefore, is unsuited to the storage of a volatile liquid such as natural gasoline, a certain percentage of which, before weathering, will boil under ordinary conditions of temperature and pressure.

It has been found, however, that by storing these low boiling point products in tanks of a spherical form of rigid construction, and as gas tight as human ingenuity can make them, the evaporation losses are reduced to a very low percentage. Additional protection against pressure due to rise of temperature is obtained by thorough surface insulation, while the liberal application of a coating of white paint, outside

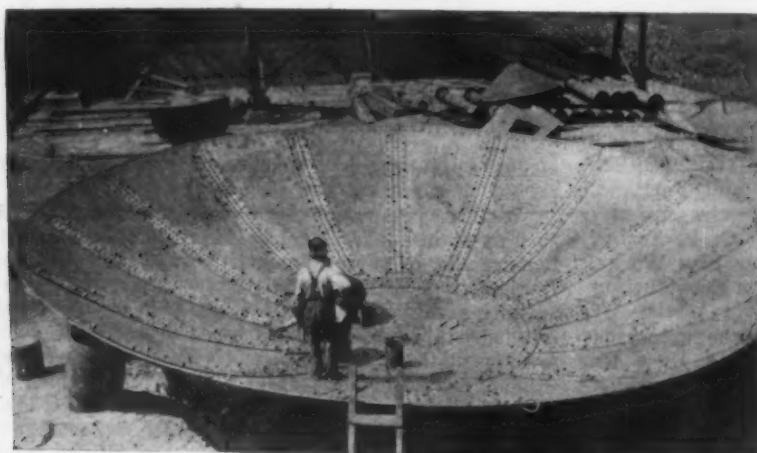


Fig. 1—With a Diameter of Approximately 11 Ft., the Dished Head at Bottom of the Tank Receives the Ends of Sixteen Accurately Curved Shell Plates Forming the Lower Course or Ring. All are butt-strapped with double riveting. The top of the tank is built this same way



of the insulating material, tends further to minimize absorption of the heat rays of the sun.

The tank proper, including the interior balcony girder, weighs about 140 tons; its charge of gasoline, when filled, an additional 1250 tons. This weight is supported by ten massive posts, built up from 15-in. channel sections, which are riveted above to the plates of the center ring of the tank and anchored through their bottom plates to the foundation piers. The posts are connected horizontally, midway of their height, by means of laced channel struts, with diagonal bracing of a pair of 1-in. square tower rods both above and below each strut.

The shell of the sphere consists of dished head

calking instead of welding. The calking is all done on the outside of the tank, the butt straps being beveled for this purpose.

The photographs accompanying this article were taken during preliminary fitting and erection of a Hortonsphere, before shipping from the Greenville, Pa., plant of the Chicago Bridge & Iron Works. In Fig. 3 the lower head plate, first and second rings and part of the center or belt ring are shown, the holes for the tower post connections appearing in the alternate plates of the center shell ring. The horizontal rows of holes, showing in this same ring, are for connection of the inside balcony girder. Fig. 4 is a general view of the interior taken from an elevation.

Fig. 2—(Right) After the Second Ring Has Been Built On, the Tank Resembles a Huge Porridge Bowl

Fig. 3—(Below) Part of the Center or Belt Ring Has Been Attached. This shows the horizontal rows of rivet holes for the inside "balcony" girder, designed to stiffen the tank against distortion. The vertical bands of rivet holes are for attachment to the ten tower posts



While the natural gasoline industry in its various phases has shown a wonderful growth during the past fifteen years from the standpoint of increased volume of product, its development along technical lines is a remarkable tribute to the American genius for invention. It is the belief and expectation of the builders that these spherical tanks, by reason of their special construction, may assist in the solution of numerous problems in blending, weathering and economical storage of the lighter petroleum products, with the possible assistance of refrigeration further to reduce losses due to evaporation.

The American Rolling Mill Co. has placed a contract with Arthur G. McKee & Co., Cleveland, for the installation of a McKee patented revolving distributor on its "East" blast furnace at South Columbus, Ohio, its "West" furnace having been equipped with a distributor some years ago. This will make a total of 142 blast furnaces equipped with the McKee revolving top.

plates with an approximate diameter of 11 ft., above and below, joined by five rings of accurately curved shell plates. All seams are heavily butt strapped; all of the spheres at present under construction are provided with butt straps, but it has been demonstrated that equally satisfactory results can be obtained from lap welded joints and this form of construction will be used to a considerable extent in future work of this character.

Additional rigidity of construction has been secured by the use of an interior balcony girder resting on twenty brackets fastened to the center shell plates, the girder and shell plates also being continuously riveted together around the center circumference of the shell.

It may seem surprising, considering the volatile nature of gasoline in question, that it has proved entirely possible to render these tanks gas tight by

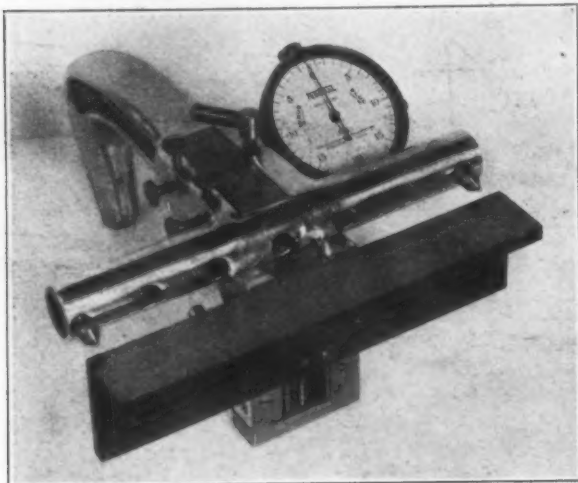


Fig. 4—General Interior View. In addition to the rivet holes shown in Fig. 3, this shows also some of the double brackets set to receive the inside balcony girder

### Portable Screw Bar Gage

The thread gage illustrated, which was designed originally for a milling machine manufacturer who required a portable gage for testing screw bars after they were assembled in the machine, and to be used also on the bench, is being made to special order by the Federal Products Corporation, Providence.

The gage has a range of 6 in. and the right-hand point is interchangeable so that it can be set to measure 1, 2, 3, 4, 5 and 6 in. screws. The table may be adjusted by the small screw in the center of the base so that it



Gage for Testing Screw Bars. The right hand point can be set to measure from 1 to 6-in. screws

will take a 2 in. diameter screw for the maximum. The indicator may be readily removed for use individually if desired.

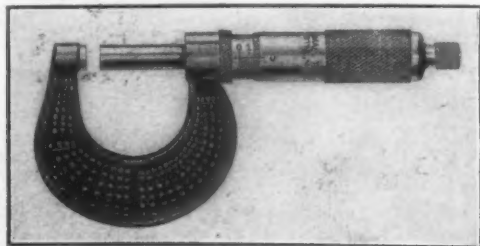
The two small screws on the opposite side of the indicator, on the side of the base, are for adjusting the tension of the indicator spring in one case, and for adjusting the range of the indicator hand in the other. The latter is provided so that the indicator hand will not snap back several revolutions of the dial when the screw being tested is removed from the table. The two screws at the top are check screws for the adjusting screw.

The body of the gage and the handle are of aluminum and the table is of steel, hardened and ground.

### Micrometer with Decimal Equivalents

Micrometers in 1-in. size having decimal equivalents on the frame as shown in the accompanying illustration, are being offered by the Reed Small Tool Works, Worcester.

The deep throated concave form of frame, the two-part thimble, the stationary anvil and rigid threaded lock joint have been retained in the new tool. The



Decimal Equivalents Stand Out On the Front of the Frame. Sixty-fourth equivalents are on the reverse side

frame is drop forged from steel, then heat-treated for special finish, and the decimal equivalent figures are raised in finishing dies subject to about 500 tons pressure. A metallic finish black oxidized, provides the background for the raised figures. The decimal equivalents of eighths, sixteenths and thirty-seconds stand out prominently on the front of the frame, the sixty-fourth equivalents being on the reverse side.

### Unfilled Sheet Tonnage Reduced

Independent sheet manufacturers reporting to the National Association of Sheet and Tin Plate manufacturers evidently had a good many specifications against old orders in October, as the monthly report of the organization shows that shipments were almost 45,000 tons in excess of sales. The month made a rather poor showing as compared with September on sales, and with both production and shipments running well in excess of incoming orders, unfilled orders suffered a substantial reduction, as of Oct. 31, standing at 307,540 tons, as against 343,096 tons a month before. Net obligations, arrived at by deducting unshipped and unsold stocks from unfilled tonnage, as of Oct. 31, were 200,656 tons, as compared with 228,783 tons at the end of September. The obligations of the mills reporting, therefore, represent less than one month's production at the October rate of operation.

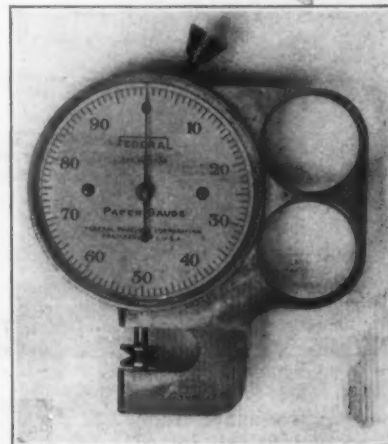
October figures, in net tons, compare with those of September and August as follows:

|                      | October | September | August  |
|----------------------|---------|-----------|---------|
| Capacity .....       | 424,000 | 377,000   | 420,000 |
| Per cent reporting.. | 69.5    | 68.8      | 69.5    |
| Sales .....          | 185,110 | 223,556   | 116,659 |
| Production .....     | 225,714 | 185,577   | 234,112 |
| Shipments .....      | 230,820 | 205,772   | 234,486 |
| Unfilled tonnage.... | 307,540 | 343,096   | 316,972 |
| Unshipped tonnage..  | 71,902  | 84,338    | 102,354 |
| Unsold stock.....    | 34,982  | 29,975    | 32,252  |

### Pocket Thickness Gage

The pocket thickness gage illustrated, which is being marketed by the Federal Products Corporation, Providence, although designed primarily for measuring paper, is well adapted for measuring sheet steel and other sheet material. Weighing but 5 oz. and being only ½ in. thick, the gage may be carried conveniently in one's vest pocket.

Pressing the small button on the top of the gage



Thickness Gage for Sheet Steel. Being only ½ in. thick and weighing but 5 oz., it may be carried in one's vest pocket

opens the jaws to their full capacity, 0.100 in. As both jaws are ground with ample radius, material may be inserted quickly. The lower jaw may be raised or lowered by turning the small adjusting screw in the bottom of the lower jaw support, which permits quick resetting of the hand at 0 in case of wear.

The College of Commerce, University of Maryland, Baltimore, has established two classes for foremen and other minor executives of industrial plants. The course is under the provisions of the Smith-Hughes act and is directed by George S. Sanders. About 40 men have enrolled. The course deals primarily with the problems of the foremen and other minor executives in the efficient training and handling of employees.



## CHINESE MARKET QUIETER

### Wire Shorts Considered Too High—British Plate Cuttings and American Nails Bought

SHANGHAI, CHINA, Oct. 15.—Demand for iron and steel products has subsided following the recent activity but there is still a fair volume of business pending. Recent orders involve small lots, but are in such considerable number as to indicate that the market is in need of new supplies. There is a fair inquiry for tubes and wire nails, but the demand for galvanized sheets has declined, compared with August and September. Activity in iron and steel products is not the same, by any means, as last month. Vladivostok has been inactive recently, but from Harbin are coming various orders for steel products, principally railroad materials. A good business has been done in this line with the United States.

China copper mints are buying electrolytic copper, but on a small scale. Copper coins have improved in value, and it is expected that there will soon be a better demand for electrolytic copper from the mints. Compared with two months ago, copper coins are almost 15 per cent more valuable and with copper quoted lower on the New York market there should be a fair profit for the mints in China. Unfortunately, these organizations have poor resources, and are not able to make purchases. Only the Hupeh mint is functioning at present, the others in Changsha, Anking and Kaifong having stopped work. The output of the Hupeh mint is not known, but is estimated at present at half the usual capacity.

Stocks of electrolytic copper in Shanghai are estimated at about 100 to 200 tons, while those in Hankow are about 500 tons. These supplies are sufficient for about three months, but this must be a reserve until the quantity contracted for is delivered. Consignments are coming through slowly. Copper coins in 1919 were quoted at 135 to a Mexican dollar, in 1920 the average was 140 to a Mexican dollar, in the fol-

lowing year it was 150 and for the ten months of this year the average was 180 coppers to the Mexican dollar. During 1919-1921 the price of electrolytic copper on the Shanghai market was \$28 to \$29 per picul, while today it is about \$30 per picul, so that compared with the price of copper, the rate for coins is considerably lower. The big output of copper coins from the mints of China in the past two years has served to reduce the value of the coins to a low figure but it is quite likely that an increase in value will follow the enforced closure of the mints.

So far the Japanese catastrophe has not affected the copper market. That substantial quantities of electrolytic copper will be needed by Japan for rehabilitation purposes is a reasonable conjecture.

Lead stocks are heavy in that country as a result of large arrivals from Australia, and buying is light. Quotations are about 14.80 yen per 100-lb.

Wire shorts are only moderately active in the Shanghai market at present prices, which Chinese buyers consider too high. Recent inquiries for medium gage sheets have specified shipment in from two to three weeks and were without result. The advance in American prices of 20c. per 100-lb. on black and galvanized sheets has so far had no effect on the local market. A reduction in the price of American plates, shapes, bars and wire products may very likely stimulate buying.

Shaoshing district has not started heavy buying of tinplate as the farmers in that district are still busy on their farms. The can-making industry there will be in full operation shortly and then a heavier demand for tinplate is expected. Some buying of Hongkong tin is still noted, but the high prices ruling are interfering with the expected flow of orders. Standard tinplate is quoted at £203 per ton, while the Hongkong market is about \$75 per picul, dealers asking a tael more. Stocks of Hongkong tin in Shanghai are small.

There has been a fair volume of purchasing in Shanghai of cut nails and an order for steel hoops has gone to the United States. China is buying plate cuttings from Great Britain.

### Tin Plate Production and Consumption in France

WASHINGTON, Nov. 20.—While the production of tin plate in the United States has almost tripled since 1900 and while that of Great Britain has increased 40 per cent, French production has remained practically stationary, says a report received by the Department of Commerce from Commercial Attaché Chester Lloyd Jones, Paris. Between 1910 and 1913, French production of tin plate actually showed a decline. This is declared to be difficult to explain because the French tin plate industry has not lacked a generous tariff protection and consumption of tin plate in France has increased. In 1913 imports were less than 20,000 metric tons annually, but in the boom year of 1920 there were 75,592 metric tons imported, the total falling to only 13,484 tons in 1921. At present imports are between two and three times those of 1913. In the last year before the war, it was estimated that about one-third of the national consumption of tin plate was imported, about 17,000 tons out of 19,500 tons coming from Great Britain.

At present it appears that an even larger percentage is imported from abroad, Great Britain continuing to be the only important source of supply. It is stated that the manufacture of tin plate in France is to some degree hindered by the high cost of coal as compared with the fuel costs in the United States and Great Britain. About 10 establishments now are making tin plate in France and it is planned by the *Acieries de Longey* to establish a tin plate mill in its rebuilt shops at Sedan. French tin plate imports from 1913 through the first seven months of 1923 totaled only 14,413 metric tons. Imports for the first seven months of this year amounted to 30,866 tons of which 25,414 tons came from

Great Britain and 5095 from the Saar. None came from the United States.

The strong position of Great Britain in supplying tin plate demands of France is declared to be due principally to the nearness of the French market and long familiarity with its needs. Great Britain also enjoys the minimum tariff rate, it is pointed out, while the United States does not. The advantage is only two francs per 100 kilos, equivalent to approximately 12c. per 220 lb. The commercial attaché expresses the view that American tin plate makers should pay greater attention to the possibilities of increasing their share of the French demands.

### Assigned Car Case Postponed

WASHINGTON, Nov. 20.—The Interstate Commerce Commission has further postponed from Dec. 1 to Jan. 1 the effective date in the assigned car case. Iron and steel manufacturers owning private cars are hopeful that meanwhile the commission will modify its original order restricting the use of privately owned cars under certain conditions.

### Coke Production Decreases

WASHINGTON, Nov. 19.—Production of by-product coke in October amounted to 3,039,000 net tons, 13,000 tons less than in September, while production of beehive coke for October is estimated at 1,290,000 tons, a decrease of 83,000 tons, and a new low record for the year, according to the Geological Survey. Of the 70 by-product coke plants now in existence, 65 were operated in October.

## BRITISH IRON AND STEEL TRADE

### Exports in October Larger—Imports Lower—Pig Iron and Steel Production Less

WASHINGTON, Nov. 20.—Exports of iron and steel from the United Kingdom in October were 388,599 gross tons, the largest month of the year (except in May, with a total of 424,509 tons) and 10 per cent greater than the monthly average of 353,500 tons for the first nine months of 1923, according to a cablegram received by the Department of Commerce from Commercial Attaché Walter S. Tower, London. The greatest increases in exports over previous months were in tin plate, with 51,400 tons, galvanized sheets, with 57,800 tons, and sheets and plates, with 50,500 tons.

Total imports for October were 106,262 tons, an amount approximating the figures given for the second quarter of 1923 (115,400 tons for April, 82,200 tons for May and 105,100 tons for June). This was about 5 per cent lower than the monthly average of 112,300 tons for the first nine months.

The table shows the principal British iron and steel imports and exports for September and October.

#### Pig Iron and Ingot Production

Pig iron production of all grades in October was 592,600 tons. While this figure shows recovery from

the previous month, it is more than 5 per cent under the monthly average of 624,200 tons for the nine-month period. Steel ingot and casting output for October was 702,100 tons, a slight increase over September but 2 per cent short of the January to September monthly average of 715,300 tons. There were 188 blast furnaces and 306 open-hearth furnaces operating on Oct. 31.

|   | Imports—Gross Tons |        | Exports—Gross Tons |        |
|---|--------------------|--------|--------------------|--------|
|   | Sept.              | Oct.   | Sept.              | Oct.   |
| Pig iron and ferroalloys..                      | 5,401              | 4,231  | 59,297             | 66,490 |
| Ingot, blooms, billets, slabs, etc.....         | 51,572             | 46,984 | 3,040              | 1,668  |
| Tin plate .....                                 | .....              | .....  | 38,725             | 51,398 |
| Galvanized sheets.....                          | .....              | .....  | 44,056             | 57,835 |
| Plates and sheets.....                          | 7,868              | 7,807  | 38,315             | 50,475 |
| Structural steel .....                          | 5,609              | 7,152  | 7,671              | 7,799  |
| Steel bars, rods, angles, etc.....              | 13,866             | 9,704  | 24,040             | 37,805 |
| Iron bars, rods, angles, etc.....               | 13,424             | 12,144 | 3,936              | 3,997  |
| Rails .....                                     | 481                | 1,008  | 36,364             | 22,962 |
| Other railroad material..                       | 676                | 861    | 22,056             | 15,346 |
| Cast tubes, pipe and fitting                    | 1,874              | 1,364  | 7,770              | 7,160  |
| Wrought tubes, pipe and fittings .....          | 2,892              | 2,337  | 9,991              | 14,803 |
| Hoops and strips.....                           | 1,404              | 1,776  | 5,617              | 7,894  |
| Bolts and nuts, including screws for metals.... | 313                | 306    | 2,184              | 2,201  |
| Nails, tacks, rivets, washers .....             | 221                | 438    | 1,484              | 1,458  |
| Wire .....                                      | 3,169              | 2,955  | 5,805              | 6,449  |
| Wire cable and rope.....                        | .....              | .....  | 2,713              | 2,601  |
| Wire nails, including staples .....             | 4,029              | 4,189  | 228                | 380    |
| Wire manufactures, n. e. s.                     | 1,038              | 392    | 2,818              | 2,923  |
| Iron and steel castings...                      | 373                | 506    | 252                | 835    |
| Iron and steel forgings...                      | 69                 | 180    | 76                 | 138    |

## STEEL PLANTS BUSY

### Works in Southern Ohio and Northern Kentucky Active—Furnace Improvements

CINCINNATI, Nov. 19.—Operations of steel mills in the southern Ohio and northern Kentucky district, as regards open-hearth furnace activity, are holding well to 75 per cent of capacity. The American Rolling Mill Co. has all its sheet mills at Middletown, Zanesville and Ashland in operation, while the Newport Rolling Mill Co. has been maintaining a rate between 75 and 80 per cent. At Portsmouth, the Whitaker-Glessner works of the Wheeling Steel Corporation is running at about 80 per cent. Expectations are that these operations will be maintained during the remainder of the year.

The bar mill of the American Rolling Mill Co. at Ashland, now under construction, is expected to be in operation late in December. The rest of the plant, due to delays in receiving machinery, will hardly be completed before early in the new year.

Four merchant and three steel works furnaces are in blast in the district. At Jackson, Jisco and Globe silvery furnaces are in operation, while at Ironton, Belfont stack is expected to resume today. Norton furnace at Ashland is now blowing on Bessemer for use at the plant of the Ashland Steel Co. and the Norton Iron Works. The American Rolling Mill Co. is operating one Columbus and one Ashland furnace, while the Whitaker-Glessner Portsmouth furnace is also operating.

Extensive improvements have recently been completed at the Jisco furnace of the Jackson Iron & Steel Co. A new lining has been put in, a pig-breaking machine has been installed, and the cast house has been elevated and extended. The water storage system has also been much enlarged, so that no matter how dry the season, the water supply will always be sufficient for the furnace's needs.

Installation of a pig-casting machine has been completed at the Belfont Iron Works at Ironton, and machine cast iron is now available for the trade. It is claimed that a new design of pig will readily lend itself to storage in foundry yards, conserving space.

Extensive improvements have also been completed at the Sarah furnace of the Kelly Nail & Iron Co., Ironton. The hearth has been enlarged, and other changes made which will greatly increase its output.

The Marting Iron & Steel Co. is understood to be contemplating extensive changes at the Ironton blast

furnace. These will have the effect of greatly increasing the output, and will give a more efficient operation, with a considerable reduction in costs.

A plan has been worked out at the blast furnaces of the steel companies operating in the district by which the 8-hr. day will shortly be installed. All merchant furnaces operating have inaugurated the three-shift plan of operation, and before the end of the present year all blast furnaces and steel plants in the district will be 8-hr. shifts. The three steel companies operating put the three-shift plan into effect in their mills several years ago.

### Developing Iron Mines in California and Across the Border

SAN DIEGO, Nov. 19.—Work of developing the iron ore deposits recently discovered in San Diego County and across the international border in Lower California will be well under way before the end of the year, according to Capt. J. A. Tregelles, discoverer of the deposits. It is reported that an Eastern syndicate and Captain Tregelles, Dr. B. F. Stanwood and Dr. M. C. Harding of San Diego plan active work on the three groups of claims they control. One of these groups is between Lakeside and Flinn Springs, in San Diego County, one near Riverview Farms, El Monte, and another in Mexico, near Tecate, which is across the border from the American town of the same name.

The syndicate has completed its surveys of the extensive claims across the border from Tecate. The surveyor who did this work reports that the Tecate deposits are much larger than those of Ensenada, 90 miles below the border in Mexico, and on the West Coast of the Lower California Peninsula.

Exploitation permits have been applied for and work of developing the claims in Mexican territory will go forward at the same time that the Lakeside and El Monte claims are being proved.

### Inland-Acme Consolidation Off

In a letter sent to all stockholders of the Acme Steel Goods Co., Chicago, it was announced that the proposed consolidation of that company with the Inland Steel Co., Chicago, has been indefinitely postponed. It was also stated that "after the auditors have gone over the Acme and Inland books, it was deemed advisable by directors of both companies to run each organization separately and not consolidate at this time."



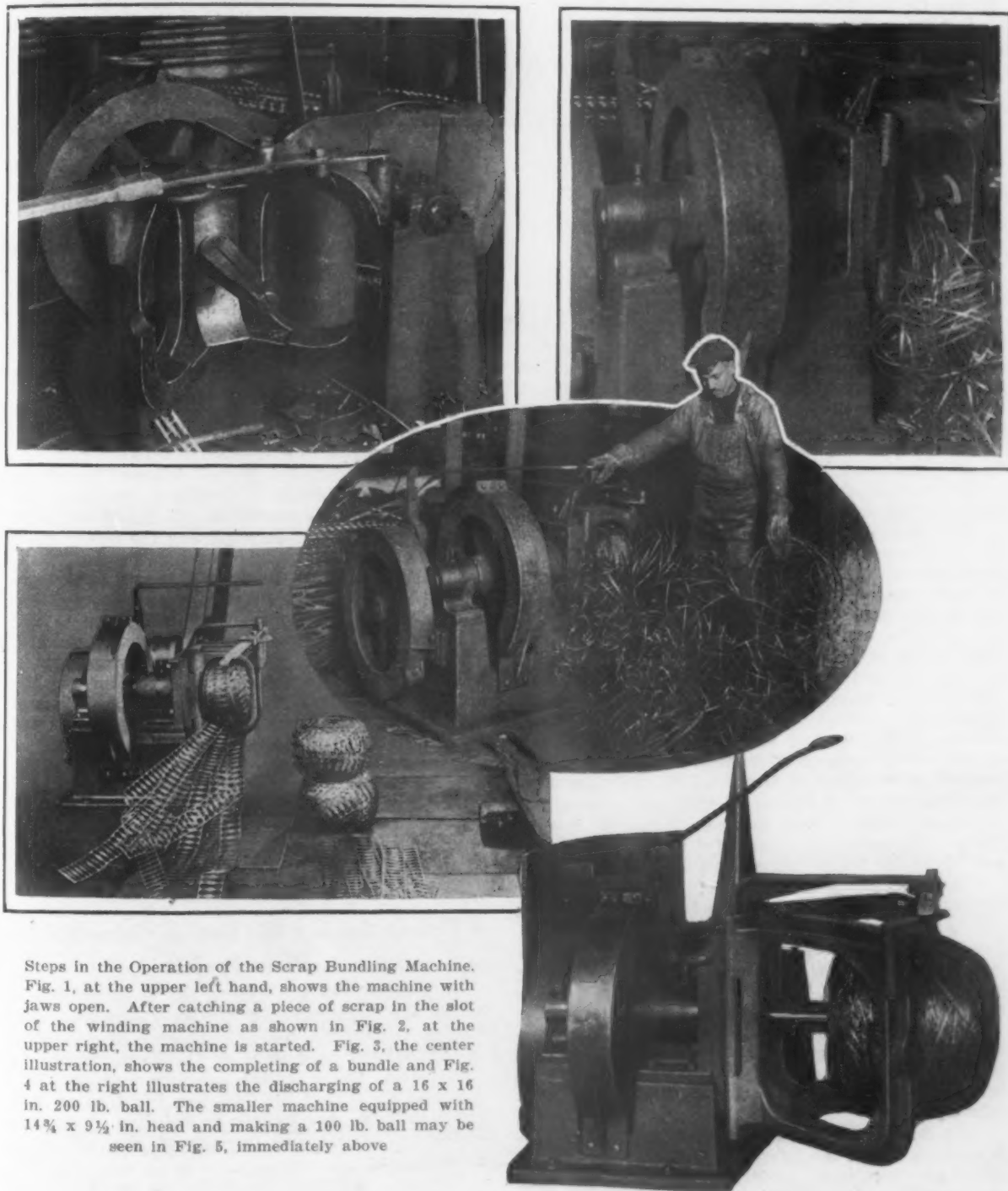
## SCRAP BUNDLING MACHINE

Adapted for Steel or Brass in Long or Short Strips or Coils—Features Outlined

The rotary baling machine illustrated was developed for handling large quantities of tangled and jagged-edge metal scrap, which in loose form often caused serious injury to operators and required extensive storage space. The machine was first patented about ten years ago, the patents being taken over later

load lots or held for better market conditions. The machine is rapid in operation, due to the method of starting and discharging scrap, and time is saved in not having to load all the scrap in any confined space. The machine pulls the scrap about its arbor with its own power. The head does not have to be confined to any particular shape but can be varied so that it will make a tapered bundle that will fit crucibles.

The machine is available in two types, either belt or motor driven, and various sizes of heads may be used according to requirements. The standard heads are 14 $\frac{1}{4}$  x 9 $\frac{1}{2}$  in. and 16 x 16 in. It has been found,



Steps in the Operation of the Scrap Bundling Machine. Fig. 1, at the upper left hand, shows the machine with jaws open. After catching a piece of scrap in the slot of the winding machine as shown in Fig. 2, at the upper right, the machine is started. Fig. 3, the center illustration, shows the completing of a bundle and Fig. 4 at the right illustrates the discharging of a 16 x 16 in. 200 lb. ball. The smaller machine equipped with 14 $\frac{1}{4}$  x 9 $\frac{1}{2}$  in. head and making a 100 lb. ball may be seen in Fig. 5, immediately above

by the Stanley Works, New Britain, Conn., which after making a few improvements has placed the machine on the market.

Among the claims for the machine are that the bundles are in such shape that they can be rolled to a pile or in a chute or piled on the flat side or handled with a magnet; that more money may be obtained for the bundled scrap; and that the expense of handling the scrap so bundled is lessened. If the scrap need not be sold as soon as made, the bundles may be stored in comparatively small space and disposed of in car-

however, that a ball of scrap 14 $\frac{1}{4}$  in. in diameter and 9 $\frac{1}{2}$  in. long, weighing approximately 100 lb., is the most satisfactory. The 16 x 16 in. head makes a ball of about 200 lb. Although designed primarily for steel or brass in the form of long or short strips or coils, small pieces of skeleton scrap may be wrapped into the ball by shoveling them on top of the long material, which acts as a binder.

The operation of the machine may be noted from the illustrations, Fig. 1 shows the jaws in the open position, the tapered arbor and the slot for holding

the starting strip of metal. After catching a piece of scrap in the slot of the winding shaft as shown in Fig. 2 the machine is started by pulling the lever operating the clutch, and the material is drawn in and wound into a ball. Fig. 3 shows the winding of a ball nearly completed. It may be noted that the operating lever is located over the head of the machine and extends beyond, and may be conveniently reached should the machine have to be stopped quickly. After enough scrap has been wound to make a complete ball, the machine is stopped and the loose ends tied to prevent unwinding. This operation also pushes the ball toward the end of the arbor, from which it is removed and taken to the scrap pile. Fig. 4 shows the discharging of a 16 x 16 in., 200 lb. bundle.

The smaller machine is shown in Fig. 5. This unit is equipped with a 14 $\frac{1}{4}$  x 9 $\frac{1}{2}$  in. head and will make

a 100 lb. ball out of stock up to 16 ft. long, 5 in. wide and 0.0165 in. thick. It will also handle scrap in pieces of any length and up to 10 in. wide and 0.171 in. thick.

Among the construction features it may be mentioned that the head, which is subject to wear, is a steel casting, and the winding shaft is of tool steel, hardened. The main winding shaft bearings are bronze bushed and those which support the back gear shaft are of babbitt. Gears, where necessary, are of cast steel and the pinions are of machine steel with cut teeth. Heavy gear guards are provided.

In the motor driven machine, the motor, which is of 7 $\frac{1}{2}$  hp. 1200 r.p.m., is located above the clutch pulley shaft, an arrangement intended to minimize the floor space required, which is about 42 in. square for this machine.

## CLAIMS BROAD POWERS

### Government Files Brief in Claire Furnace Co. Case in Supreme Court of United States

WASHINGTON, Nov. 20.—Contending that Congress can constitutionally authorize an administrative body to collect information respecting any subject over which it has legislative jurisdiction, the Government has filed a brief with the Supreme Court in the Claire Furnace Co. case which has been set for argument on Dec. 3. The brief was prepared by Solicitor General James M. Beck of the Department of Justice, Chief Counsel W. H. Fuller and Attorney Adrien F. Busick of the Federal Trade Commission.

The proceedings have gone to the highest court upon appeal of the Government after the lower courts had granted permanent injunctions against the Federal Trade Commission restraining it from demanding information from 22 iron and steel companies as to quantities of iron and steel, capacity of plants, prices at which sales were made, prices named in contracts of sale and the cost of manufacturing. The Supreme Court of the District of Columbia and the Court of Appeals of the District of Columbia and the Federal courts in New Jersey and Pennsylvania held that manufacturing is not interstate commerce and therefore the commission was without authority to compel the submission of the required data which the commission demanded by resolution of Dec. 15, 1919, following Congressional action of August of that year asking that commission what it could do touching the high cost of living. The commission proceeded under sections 6, 9 and 10 of the Trade Commission act.

The commission maintains that Congress has power to compel witnesses to appear and testify concerning, and to produce books, papers, etc., relating to any subject over which it has legislative jurisdiction. This power, the brief says, exists not as an aid in detecting breaches of existing law, but as an auxiliary to the exercise of the legislative function.

In the lower courts, the iron and steel companies contended that Congress was without power to fix prices in any save quasi public businesses, and that this being true, Congress could not require information respecting prices.

"To this we reply that this court will not assume in advance that if the information should disclose high prices and very large profits, Congress has not sufficient wisdom and constructive ability to find some remedy for the situation short of fixing prices," says the Government brief. "Congress is entitled to an opportunity to exercise its function within its best judgment and then, if it transcend its powers, this court will declare its action invalid.

"Further, appellees' (iron and steel companies) contention assumes that if there are high prices and large profits, they are due to natural causes and not to artificial burdens or restrictions which it may be within the jurisdiction of Congress to remove. One of the purposes of the inquiry was to ascertain not only what prices obtained but what were the causes. When

Congress is in possession of this information, it may exercise its judgment with respect to the remedy with the knowledge that the constitutionality of its action must be passed upon by this court."

The brief declares that the only questions for the courts to determine, where the power is challenged, are whether the inquiry is with respect to subject matter committed to the jurisdiction of Congress, whether the information demanded is relevant to the subject matter and whether constitutional guaranties of the citizens are invaded. The brief endeavors to reply affirmatively to these points.

Taking up the question as to jurisdiction of Congress over interstate commerce, the brief says that the purchase and sale of commodities between persons negotiating from different States, followed by transportation of commodities to other States, has always been held to be interstate commerce. To hold that Congress may require information respecting the interstate commerce of corporations but may not demand it as regards their commerce wholly within a State, the brief says, is to say that the legislature must proceed blindly in a field where the constitution itself requires that it shall proceed with greatest care; that is, in the field of intrastate commerce, where only such regulation may be resorted to as is necessary to carry out the power conferred to regulate interstate commerce. It is argued that the information called for by the questionnaires sent to the iron and steel companies by the commission concerns interstate commerce itself or matters so closely related to such commerce as to be necessary to an intelligent report upon conditions existing in such commerce and may be lawfully required. It is impossible, it is asserted, to segregate the required data between the interstate and intrastate commerce.

### A Protest Against the British Columbia Steel Plant Project

In view of the fact that a bill is to be presented before the legislature of British Columbia, now in session, authorizing the guaranteeing of one-third of the \$12,000,000 bond issue of the Coast Range Steel Corporation, the executive committee of the British Columbia division of the Canadian Institute of Mining and Metallurgy has written to the Hon. John Oliver, protesting against the passage of the bill, on the grounds that:

"Any proposition requiring guarantees covering the entire capital must be inherently unsound.

"If a proposition is economically attractive, capital usually is available for it without government guarantees.

"Under such conditions, capital requires reasonable proof of the attraction, and a government cannot give financial assistance upon less assurance of security than would be required by a private investor.

"The character of the liability proposed by Coast Range Steel, Ltd., is not such as to warrant its being incurred by the Provincial Government at this time, and especially in view of the fact that iron and steel industries in Eastern Canada, where natural conditions are at least as favorable as in British Columbia and market conditions eminently more so, have often failed to show a profit despite government assistance."



### Wholesale Prices in October

Reports to the Bureau of Labor Statistics show a slight reduction (nearly 1 per cent) in the average price of all commodities in October as compared with September. Of the nine groups of items listed fuels, metals, clothing and the miscellaneous item showed a drop, these being slight in every instance. Increases occurred in foods and chemicals and drugs, while house furnishing goods, building materials and farm products remain stationary. Of the 404 commodities or series of quotations covered, 136 showed increases, 104 showed decreases and 164 remained stationary. Details in the accompanying table, showing the groups of commodities, indicate that in only two groups has there been a decrease since last year, these being fuels, which were excessively high a year ago because of the coal strike, and building materials.

| (1913 average is 100)             | Peak<br>of<br>1920 | Octo-<br>ber,<br>1922 | Septem-<br>ber,<br>1923 | Octo-<br>ber,<br>1923 | Advance<br>in<br>One Year<br>Per Cent |
|-----------------------------------|--------------------|-----------------------|-------------------------|-----------------------|---------------------------------------|
| Farm products.....                | 247                | 138                   | 144                     | 144                   | 4.3                                   |
| Foods.....                        | 248                | 140                   | 147                     | 148                   | 5.7                                   |
| Cloths and clothing....           | 346                | 188                   | 202                     | 199                   | 5.9                                   |
| Fuel and lighting.....            | 281                | 226                   | 176                     | 172                   | *23.9                                 |
| Metals and metal<br>products..... | 203                | 135                   | 144                     | 142                   | 5.2                                   |
| Building materials.....           | 300                | 183                   | 182                     | 182                   | *0.5                                  |
| Chemicals and drugs....           | 213                | 124                   | 128                     | 129                   | 4.0                                   |
| House furnishings.....            | 275                | 176                   | 183                     | 183                   | 4.0                                   |
| Miscellaneous.....                | 208                | 120                   | 121                     | 120                   | 0.0                                   |
| All commodities.....              | 247                | 154                   | 154                     | 153                   | *0.7                                  |

\*Reduction.

For the past seventeen months the general level of "all commodities" has not been above 159 nor below 150. During that period it has hovered around the same level as was reached early in 1917, on the climb of prices toward the war-peak.

### Living Cost Rising

Figures of the National Industrial Conference Board show living cost at 64.1 per cent above July, 1914, based upon the budget of the average wage earner. This compares with 63.4 per cent excess in September. The increase is due to a rise of 0.7 per cent in food prices and 0.6 per cent in clothing prices. Much of this increase is attributed to steady advance in wage rates, whereby among others readjustment in the metal trades fixed wages for certain skilled labor on a new range of \$125 to \$150 per week.

### Philadelphia Steel Club Elects Officers

The Steel Club of Philadelphia, composed of the district sales managers of steel companies, has elected as its new president Harry G. Uphouse of the Donner Steel Co. H. B. Gaylord, Carpenter Steel Co., is vice-president elect, and Walter L. Fottrell, Republic Iron & Steel Co., secretary and treasurer elect. The board of directors is composed of these officers and W. B. Kennedy, Bethlehem Steel Co., and Paul M. King, Worth Steel Co. J. B. De Wolfe, district sales manager of the Trumbull Steel Co., won the club's annual golf tournament and the cup donated by William L. Hoffman, former district sales manager of the Brier Hill Steel Co.

E. James Lowry, metallurgist, Hickman, Williams & Co., Inc., Cincinnati, was the guest of the evening at the meeting of the New England Foundrymen's Association, Nov. 14, at the Exchange Club, Boston. Approximately 80 attended the meeting, which was presided over by George A. Ray, Taylor & Fenn Co., Hartford, Conn., president. The Truscon Steel Co., W. T. Mohan, 147 Summer St., was admitted to membership.

A competitive examination will be held throughout the country on Jan. 9, 1924, to fill a vacancy in the work of Junior Metallurgist in the Bureau of Mines, Department of the Interior, for duty at Reno, Nev. Application blanks may be obtained from the United States Civil Service Commission, Washington.

### A. T. Simonds Urges Conservative Policy with Limited Buying

A. T. Simonds, president Simonds Mfg. Co., Fitchburg, Mass., was a speaker at a convention held in Springfield, Mass., last week of New England purchasing agents. Mr. Simonds is a student of economics, and is connected with the Harvard School of Business Administration and the American Chamber of Economics, New York. He said in part:

"The United States has 5.8 per cent of the world's population and 47 per cent of the world's gold, which creates a false credit structure, and sooner or later this country will be affected by conditions in Europe, no matter how high we build our tariff walls or restrict immigration."

Mr. Simonds cited the conditions in Great Britain, where, he said, 1,200,000 have been without employment for three years because of the absolute turnabout of policy of business there as a result of the war. He advocates a policy of "short" buying, or taking care of immediate requirements only as "we are facing and have been since November, 1918, a steady decrease in prices, sometimes rising for a moment, but generally on the decline. Fixed capital cannot be profitably employed since the war, but working capital always can be employed at profit."

He suggested keeping plants and the purchase of materials down to absolute necessities, and labor employed steadily in production rather than having large plants working full capacity part of the time and closed in whole or part the rest of the year. He stated he would rather have a small fixed capital represented by the plant and a big working capital to make money with than to reverse the order.

### Revival of Activity of Anshan Iron and Steel Works

WASHINGTON, Nov. 20.—The South Manchuria Railway Co. has allocated 11,000,000 yen for the revived activity at the Anshan Iron and Steel Works in South Manchuria to be expended during the fiscal years 1924 and 1925, according to the *Manchuria Daily News*, says a report received by the Department of Commerce from Consul General C. E. Gauss, Mukden, China. During 1924 between 6,000,000 and 7,000,000 yen is to be applied toward carrying out the preparatory work for an annual production of 200,000 tons of pig iron at this plant. It is understood that for some time this plant has been working at low capacity with reduced staffs.

### Car Loadings Heaviest in History

Figures of the American Railway Association show car loadings for the week ended Nov. 3 at 1,035,776, this being the twentieth week, in the 24 latest weeks, in which more than 1,000,000 cars have been loaded. The total for the year to date aggregates 42,655,661 cars, compared with 36,199,995 cars in 1922 and 33,699,128 in 1921, each to the corresponding date.

Freight traffic in the first nine months of the year amounted to 343,796,799,000 net ton miles. This is an increase of 2.8 per cent over the previous high record, which was made in the corresponding period of 1920. It is an increase of 31 per cent over the first nine months of last year, most of this increase being due to the coal strike of 1922.

The Detroit Section of the Society of Automotive Engineers is inaugurating a series of meetings devoted to production subjects presented by factory men. These meetings will not interfere with the regular engineering meetings which will take place the first Thursday of each month, but will be an additional series held the third Thursday of each month. The first was held in the General Motors building, Nov. 15, when the subject was "Gears—Is It Necessary to Grind?" Papers were presented by L. A. Danse, Cadillac Motor Car Co., and O. Shafer, Studebaker Corporation, J. Brodie, Packard Motor Co.

## COPPER AND BRASS RESEARCH

### Officers and Directors of Association to Promote Use of Copper

At the third annual meeting of the Copper and Brass Research Association, held Nov. 15 at the association's offices, 25 Broadway, New York, the following were elected directors for the ensuing year, the first eight mentioned comprising the executive committee.

R. L. Agassiz, president Calumet & Hecla Consolidated Copper Co.; Edward H. Binns, president C. G. Hussey & Co.; Stephen Birch, president Kennecott Copper Corporation; F. S. Chase, president Chase Metal Works; Walter Douglas, president Phelps Dodge Corporation; Charles Hayden, vice-president, Chino, Nevada Consolidated, Ray Consolidated, and Utah Copper companies; C. F. Kelley, president Anaconda Copper Mining Co.; H. J. Rowland, secretary and sales manager Rome Brass & Copper Co.

J. W. Allen, treasurer Greene Cananea and Inspiration Consolidated Copper companies; Henry F. Bassett, president Taunton-New Bedford Copper Co.; H. C. Bellinger, vice-president Chile Exploration Co.; J. Parke Channing, vice-president Miami Copper Co.; Joseph Clendenin, Braden Copper Co.; Carl F. Dietz, president Bridgeport Brass Co.

B. Goldsmith, president National Brass & Copper Co.; E. O. Goss, president Scovill Mfg. Co.; Robert H. Gross, president East Butte Copper Mining Co.; U. T. Hungerford, president U. T. Hungerford Brass & Copper Co.; C. V. Jenkins, treasurer Chino and Utah Copper companies, secretary-treasurer, Nevada Consolidated Copper Co., assistant treasurer, Ray Consolidated Copper Co.; Wm. Loeb, vice-president American Smelting & Refining Co.; H. B. Paull, auditor Calumet & Arizona Mining and New Cornelia Copper companies; Dr. R. M. Raymond, United Verde Extension Mining Co.; A. B. Seelig, manager Michigan Copper & Brass Co.; W. Parsons Todd, manager of sales, Copper Range Co.

After the annual meeting the directors elected the following officers:

President, R. L. Agassiz; vice presidents, C. F. Kelley, F. S. Chase, Walter Douglas, H. J. Rowland and U. T. Hungerford; treasurer, Stephen Birch; secretary, George A. Sloan; manager, William A. Willis.

### Management Association Elects Officers

At a meeting of the American Management Association held at the Bankers Club, New York, Nov. 14, Sam A. Lewisohn, vice-president Miami Copper Co., was elected president. Charles R. Hook, vice-president American Rolling Mill Co., John A. Stevenson, vice-president Equitable Life Assurance Society, and Fred W. Tasney, vice-president Prudential Insurance Co. of America, are vice-presidents of the association. L. F. Musil, comptroller Cities Service Co., will be treasurer, and H. B. Bergen, manager personnel department Henry L. Doherty & Co. will be assistant treasurer. W. J. Donald, 20 Vesey Street, New York, continues as managing director and secretary.

Among the directors are: J. M. Larkin, assistant to president Bethlehem Steel Corporation; Elisha Lee, vice-president Pennsylvania Railroad Co.; D. W. K. Peacock, personnel director White Motor Co.; Arthur H. Young, manager of industrial relations International Harvester Co.; W. W. Kincaid, president Spirella Co., Inc.; C. R. Dooley, manager personnel and training Standard Oil Co. of New Jersey, and C. S. Ching, supervisor of industrial relations United States Rubber Co.

### To Study Corrosion, Heat and Electrical-Resistant Alloys

At the invitation of the secretary-treasurer of the American Society for Testing Materials, an informal conference was held at the society's headquarters in Philadelphia on Oct. 24 to discuss the manner in which the society might most usefully and profitably study the subject of corrosion-resistant, heat-resistant and electrical-resistant alloys. It was generally agreed that the time is not opportune for the preparation of standard specifications for such alloys, because new alloys and new uses are being developed to such a degree that the framing of standards would probably retard progress

In commenting upon the work of the association, which is an unincorporated, voluntary organization composed of the principal brass and copper companies, R. L. Agassiz, president of the association, said:

"Copper consumption in this country for the first three-quarters of 1923 (and this includes brass, in which form is consumed about one-half of all the copper used in this country) was greater than consumption for the entire year of 1922. The outlook for 1924 is favorable by virtue of the prospect of continued activity in the three largest brass and copper-consuming industries, i.e., electrical, automotive and building construction.

"Copper consumption in the United States at the present time is about 70 per cent of the world's production. Our survey of channels of consumption indicates that the ultimate or potential demand for copper and brass in this country has by no means been reached."

The following are now members of the Copper and Brass Research Association:

American Smelting & Refining Co., Anaconda Copper Mining Co., Arizona Commercial Mining Co., Braden Copper Co., Bridgeport Brass Co., Calumet & Arizona Mining Co., Calumet & Hecla Consolidated Copper Co., Chile Exploration Co., Chino Copper Co., Chase Metal Works, Copper Range Co., T. E. Conklin Brass & Copper Co., Dallas Brass & Copper Co., Engels Copper Co., The East Butte Copper Mining Co., Granby Consolidated Mining, Smelting & Power Co., Ltd., Greene Cananea Copper Co., U. T. Hungerford Brass & Copper Co., C. G. Hussey & Co., Inspiration Consolidated Copper Co., Kennecott Copper Corporation, Merchant & Evans Co., Michigan Copper & Brass Co., Miami Copper Co., Mother Lode Coalition Mines Co., National Brass & Copper Co., Nevada Consolidated Copper Co., New Cornelia Copper Co., New England Brass Co., Old Dominion Co., J. M. & L. A. Osborn Co., Phelps Dodge Corporation, Ray Consolidated Copper Co., Richards & Co., Inc., Rome Brass & Copper Co., Scovill Mfg. Co., Shattuck Arizona Copper Co., Taunton-New Bedford Copper Co., United Verde Extension Mining Co., Utah Copper Co.

in the art. However, the society can perform a very useful function by gathering together the principal available data regarding the properties and uses of these alloys, and the conference has suggested to the executive committee the formation of a special committee, which might be attached to the committee on papers in an advisory capacity, to be charged with the preparation of such data for presentation at the 1924 annual meeting, possibly in the form of a symposium.

Further tests of these alloys to supplement existing data is a matter for future consideration. The development of the subject on a permanent basis through the organization of one or more standing committees will be determined largely by the outcome of the symposium. The secretary-treasurer will welcome any suggestions relating to the arrangement of this symposium. Those present at the meeting were: W. H. Bassett, W. M. Corse, L. O. Hart, A. A. Hassan, P. E. McKinney, P. D. Merica, H. M. Williams, and C. L. Warwick, the secretary-treasurer.

### Steel Treaters May Select Boston for 1924 National Gathering

W. S. Bidle, treasurer; Frank Gilligan, past president, and W. H. Eiseman, secretary American Society for Steel Treating; H. F. Handy, Saco-Lowell Shops, Boston, chairman of the local chapter's committee, and John Davis, together with W. Irving Bullard, director Chamber of Commerce, and Charles J. Cox, representing Mayor Curley, Boston, were the guests last week of H. H. Harris, president General Alloys Co., at a dinner given at the Engineers' Club, Boston.

The purpose of the gathering was to arrange, if possible, the holding of the next annual convention and international steel exposition of the society in Boston. Tentative plans fix the time for the exposition as either the last week in September or the first week in October, 1924, in Mechanics Building, if a decision to select Boston is made.



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ESTABLISHED 1855

# THE IRON AGE

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## Results of Conservative Feeling

LAST May a sort of wave of conservative feeling spread rapidly through business circles. This was distinctly a feeling rather than a conclusion. All the statistical facts were favorable. There seemed to be something in the air, and men asked each other what was the matter. So-called "warnings" were issued enjoining caution lest business be overdone to the point of causing a reaction.

During the summer there was some outspoken criticism of this conservative talk. It was asserted that business was all right, but was likely to be damaged rather than befriended by such advice. The specific point in the argument was that by preparing for a business reaction it was possible to bring on one that otherwise would not occur.

There is now the definite record that for six months industrial activity in the United States has held up at a very high level in the face of what has been everywhere recognized as a very conservative feeling. It is too early to pass final judgment, but this fact is, at any rate, an impressive one.

Warnings are always good if there is foundation for the warning and there is no exaggeration, no straining of the point. As an academic question every one probably will agree that warnings against inflation are good, but there will be differences of opinion as to what constitutes inflation.

In 1908 we had "sunshine clubs" which preached that all that was needed was "confidence" and that if every one would simply become confident business would be good. The movement was not a success and it was generally concluded that confidence could not be built up in that way. Yet it is argued that confidence can be destroyed by talk. That scarcely speaks well for confidence.

We have had cases in the past when warnings, or anticipation of trouble, have proved very beneficial. There was, for instance, the panic that was predicted for 1913. The twenty-year cycle had many votaries at that time: 1873-1893-1913. There were many causes, including the change

of administration at Washington, that to some minds were sufficient to produce a panic. There is no doubt that many did prepare against a panic in the summer of 1913. No panic occurred. If no panic had been expected one might have come, since the element of surprise looms large in panics. Eventually there was an industrial depression, but that is quite different.

While final judgment cannot be given at this time, recent developments, as well as lack of developments, have given indication that the conservative feeling in business circles in the past six months has been beneficial rather than otherwise. Almost every one will admit that today we are better off in a business way than we expected to be.

## Bonus Fundamentally Wrong

IN his annual address as president of the National Founders' Association, William H. Barr discusses cogently problems which are demanding the attention of business men of the country today. Many timid politicians would like to sidetrack all subjects which do not give them a chance to make political capital in a Presidential year, and if public sentiment is to be aroused against anything that is unsound in the economic policy of the country, business men must be counted on to do even more than their share. The National Founders' Association is fortunate in its leadership.

On the important question, "Will the Sixty-eighth Congress reduce our taxation?" Mr. Barr expresses the opinion that it will, provided there is no bonus legislation and provided there is the strict economy in Government operation which President Coolidge and the members of his Cabinet are urging. Mr. Barr points out objections usually urged to the bonus: that it will be a burden upon every man, woman and child in the country, including, of course, the soldiers themselves; that it will be a deterrent to prosperity, and that by indirection it would limit the amount available for the wounded and helpless. He might have added, as was said so forcefully by the late Presi-



rent Harding, that it is folly to provide for a bonus without at the same time providing a means for raising the money to pay the bonus. All of these objections are very much to the point, but greater emphasis should be put on the fact that the bonus is fundamentally wrong because it attempts to pay by so-called "adjusted compensation" the men whose services cannot be counted in dollars and cents. There is a disposition in some quarters to avoid going to the heart of this subject; but, it is encouraging that many of the soldiers themselves, who rendered service of the highest kind in France, are opposed to any form of so-called compensation. They also realize that the men who saw service abroad and even those whose activities were confined to the camps of this country, had broadening experience for which they cannot pay, experience which will make them bigger men throughout life.

President Barr is right. Taxes will be reduced if the bonus bill fails and there is reasonable economy in other ways at Washington. He is also right in saying that the business men of the country have no right to dodge their responsibility.

### Use or Abuse of Wealth

SEVERAL columns of comment, much of it in the form of letters to the editor appearing in THE IRON AGE recently, prompted by the article by Dr. W. R. Ingalls on "Distribution of Wealth in the United States" testify to the popular interest in this general subject. Dr. Ingalls fully refuted the claim that "2 per cent own 65 per cent of the wealth" and showed that the proportion is under 30 per cent, and probably about 20 per cent.

One correspondent doubted the benefit of the analysis, on the ground that establishing any percentage, even though much lower than 65, would aid those who want to "soak the rich." To this Dr. Ingalls replied, in substance, that it is our plain duty and our first duty to get the facts and then see what to do about it.

It is of interest to know who owns the wealth or how the wealth is distributed, because we expect conduct to be based upon beliefs or assumptions regarding the matter. As was said in our introduction to Dr. Ingalls' article, "In the next twelve months the changes will be rung on the issue of unequal distribution of wealth, in the effort to array the house of 'have not' against the house of 'have.'"

The situation we face is not one of a new discovery having been made, that wealth is not equally distributed, that some have more than others. Whatever the condition, it is one that has long existed. There is less disposition now than formerly to claim that wealth is becoming more centralized. We do not hear now so often as in 1896 the assertion, "The rich are growing richer and the poor are growing poorer" and the talk of a decade later of "swollen fortunes" is not so prevalent.

What is before us is simply a fresh effort to stir up feeling, to make political capital, on an

old subject. What conduct will result from these efforts? It is very fitting to consider what conduct has resulted in the past. Every one, on whatever "side" he may wish to place himself, should be ready to recognize plainly and frankly that long ago American thought adopted the principle that the use to which wealth is put is a prime factor. Never in this country would there have been tolerated the use of any large amount of wealth in riotous living, in personal aggrandizement or any ostentatious display or in extravagance of any sort. In other words, common thought has recognized that the wealth must be well used, for the benefit of society. Let it be recognized that there is no important new thing to be said on this point, no new doctrine to be enunciated.

The real question is one of administration or efficiency. If anyone intends to argue, as no doubt many do, that there should be a "wider distribution of wealth," it is neither a matter of distributing dollars for a fresh class of people to spend extravagantly, nor of distributing locomotives, dynamos or machine tools, but of distributing shares of stock. This ought to simplify the matter. Shares are already being distributed. The more thrifty acquire them and the most thrifty accumulate them. The test is a continuous one, whether corporations with widely distributed ownership or corporations with limited ownership have the greater success, and the determining factor for success is service to the public. Service is what the public wants.

### The Decline in British Electric Steel

A GLOOMY picture of the electric steel industry of Great Britain is drawn by the London *Ironmonger*. It is a surprise to read that of the 60 electric furnaces existing in Sheffield a few years ago only one in ten has been operating regularly this year. About the same number have run intermittently, several have been dismantled and sold and others are for sale. Only a few companies are making tool steel in the electric furnace and the older or crucible method "now dominates the field." Those who less than ten years ago said that the day for crucible melting of high grade steels had passed "have been completely discredited," though it is conceded that the electric furnace is an ideal instrument for stainless steel and iron, for steel castings and for certain special alloy steels.

Perhaps it was too much to expect that the ancient citadel of British tool steel could be taken by the electric furnace, for there is no question that the crucible is a satisfactory vehicle for producing the highest grades. In the less conservative atmosphere of the American industry, however, the electric furnace is still in the lead for the production of high grade steels. Most of the tool steel is electrically made and in the steel foundry, particularly small ones, the swing has been steadily to the electric furnace. Thus the American electric steel industry continues to increase each year in output and capacity. The rea-

sons for the contrary experience in Great Britain are not entirely clear.

### Stabilizing Commodity Prices

**F**IGURES of the Bureau of Labor Statistics show the October wholesale price of "all commodities" as 153, compared with 100 as the 1913 average. Not since May, 1922, has the figure been below 150, nor has it been above 159. The maximum in 17 months has been 6 per cent above the minimum and 2.9 per cent above the mean. In the calendar year 1914 the maximum of 102 was more than 5 per cent above the minimum of 97 and was 3.9 per cent above the mean. Even in 1913, a year of unusual stability of prices, the maximum was 3 per cent above the minimum and 2 per cent above the mean.

We think of certain prices as being far out of bounds, and so they seem in comparison with pre-war figures. The general line-up differs materially from that of ten years ago, some prices being much further above the old figure than others. Thus, October shows cloths and clothing almost exactly twice the 1913 figure, while in chemicals and drugs the increase is only 29 per cent. Metals, farm products and foods are between 40 and 50 per cent above 1913, and all of these are below the general average of all commodities. It is the clothing, fuel, building materials and house furnishings groups that are disproportionately above the average.

As most of the commodity prices considered are wholesale prices, little affected by the labor monopolies that have been conspicuous for profiteering, we may be justified in regarding them

as measurably stabilized—at least until some major business crisis pulls them down. Their fluctuations in more than a year have been less than the 1914 fluctuations and only slightly greater than those of 1913. As they have gone up and down and then up again during 17 months, and are now not far from the average of that period, we may expect them for some little time to move very narrowly about this average.

**I**RON ore has been coming into the United States in greater volume this year than at any time in the last decade under peace-time conditions. To Oct. 1 over 255,200 gross tons per month had been imported, or more than three times as much as in the first nine months of 1922. The largest previous average was 216,230 tons per month in 1913. Freight rates are so high on ore from Lake Superior to Eastern furnaces that the latter have had to turn to foreign ore. Imports from Sweden are the largest factor in this year's movement, whereas ordinarily Cuban ores have led. To Oct. 1 the total from Sweden was 674,000 tons and from Cuba 602,000 tons.

**T**HE turning of the people of Continental Europe, in their despair, to dictatorships when attempts at popular government have failed is bound to produce some serious thoughts. When we were in the war, it was represented that we were going to make the world safe for democracy, but instead of that we have a condition in which for these troubled countries government by tyranny has become the only thing possible.

### Columbia Steel Corporation's New Blast Furnace and Rolling Mills

The Columbia Steel Corporation put in operation on Oct. 16 its two new 75-ton open-hearth steel furnaces at Pittsburg, Cal., and in the same week the recently completed rod mill was started. Manufacture of nails was begun early this month. The new sheet mill buildings are completed and it is expected that sheet manufacture will begin early in January.

Good progress has been made also in the construction work the company has under way in Utah, in connection with the building of a blast furnace and coke ovens. The first unit of the coal mine at Columbia, Utah, has been developed to the point of production and pending completion of the coke ovens at Ironton, Utah, the output of the mine is being sold in the market. The railroad to the coal mine was completed Aug. 1 and houses are now being built at the mine townsite. The Union Pacific Railroad has completed its line to the company's iron properties at Iron Springs, Utah, and shipments of iron ore for commercial purposes are being made until required for stock at the blast furnace. Construction of the coke ovens and blast furnace at Ironton, Utah, is well along and it is expected they will be ready for operation in the early spring of 1924.

### Active Building in Detroit

The cost of new building construction in Detroit during the first ten months of the year totaled \$110,888,291, which is approximately \$15,000,000 in excess of the total expenditure for the year 1922. The building trades estimate that a total of from \$125,000,000 to \$130,000,000 will be the city's total for 1923 construction work. The record for October, as announced

by the Detroit department of Building and Safety Engineering, shows a considerable gain in building activities, as compared with September, and a striking increase over October, 1922. A total of 3426 permits was issued last month, aggregating in cost \$12,485,880. This is 676 more permits and approximately \$3,900,000 in cost than during October, 1922, and approximately \$3,000,000 more than for last September.

### The Iron Age and Its Readers

Dr. Richard Moldenke's article, "How Germany Must Work Out Her Problems," which was a feature of THE IRON AGE of Nov. 15, prompts a reference to the high standard maintained by the news service our readers have had from Europe. In the war years our London cables were the dependence of the steel trade of this country for information on the course of markets abroad. In the five years since the armistice our European representatives have covered market and plant developments in Great Britain and on the Continent in a way that has met with appreciative response from our readers.

Dr. Moldenke's noteworthy letter in our last issue brought together the results of close contact in recent months with the situation in Germany. Written in October, it anticipated action by the German authorities which became a matter of cable record only last week.



## Trumbull Steel Co.'s Sales of Sheets to Japanese Government

YOUNGSTOWN, Nov. 20.—President Jonathan Warner states that the Trumbull Steel Co., which is working off a large order of sheets for the Japanese Government, accepted this business at the prevailing market, and in some cases, at prices higher than current levels. The Trumbull company was favored with a sizable order because of its ability to roll diversified sizes and to deliver sheets to Japan in tin mill sizes. All Japanese tonnage was booked at the prevailing quotations of the American Sheet & Tin Plate Co. for domestic sheet tonnage, he states.

The high rate of operations being maintained by the Trumbull company continues to be the outstanding feature of the independent iron and steel situation in the Mahoning Valley. Mr. Warner states his company is operating virtually at a capacity rate and that tin and strip buying is good.

The company has made an average monthly addition to surplus this year in excess of \$200,000.

## Mill Operations in the Mahoning Valley

YOUNGSTOWN, Nov. 20.—Production has been curtailed the past month by the Youngstown Sheet & Tube Co. and the Republic Iron & Steel Co. Some of the pipe tonnage being rolled by the Sheet & Tube company, which would ordinarily be made at the East Youngstown properties, is now being diverted to the Chicago plants. In this way the Sheet & Tube company secures the advantage of freight rate differentials in shipments to the Southwest and the West from Chicago as compared with the Mahoning Valley.

Owing to delay in securing minor equipment, initial operations at the new plant in Warren of the American Puddled Iron Co., originally scheduled for October, have been delayed until after the first of next year.

## Slight Change in Employment

WASHINGTON, Nov. 20.—The iron and steel industry increased employment by only 0.03 per cent during October over September, according to the United States Employment Service, Department of Labor. A decrease of 0.18 per cent was made in employment in the 1428 reporting firms. The Survey says, however, that rather than a decline in employment during October, undoubtedly there would have been an increase had it not been for the temporary closing of many of the larger textile mills throughout the New England district. This, together with a curtailment of 2.36 per cent in operations in railroad repairs shops, was held to be responsible for the slight downward trend. A decrease of 0.28 per cent was made in employment in October in non-ferrous metal and metal products.

## Repairing Ruptured Pipe by Welding

The rupturing or breaking of pipe in the power system of an industrial plant is often the cause of a shut-down and concurrent interruption of production. Such breaks may be repaired by oxy-acetylene welding, and the following method has been found satisfactory.

When a break occurs at a certain point in a pipe, it is usually feasible to assume that the pipe is weakest at that particular point. In repairing the break by oxy-acetylene welding, it should be kept in mind that the metal immediately in the vicinity of the break is probably weak also, and for this reason it is best to remove it for a short distance back from the break.

If the break is a longitudinal rupture, as is usually the case, it may be repaired as follows: With an oxy-acetylene cutting blowpipe cut away the ruptured and weakened metal, leaving a rectangular hole in the pipe. Then a rectangular patch of the same thickness and form may be obtained by cutting it from a stock or scrap length of the same size and class of pipe, or it may be readily formed from a piece of sheet steel of the same thickness as the pipe wall. If this thickness

is  $\frac{1}{8}$  in. or more, the edges of both the hole and the patch should be beveled to a 45 deg. angle with the cutting blowpipe so that when the piece is inserted a 90 deg. vee will be formed, thus permitting the welder to obtain full penetration of the joint when he butt-welds the patch in place.

A piece of rod welded to the patch will serve as a handle by which it can be held in place during welding and is readily cut off with the blowpipe after the welding is completed. This type of repair may be completed in an hour or two.

## Effect of the Character of Steel Upon the Results Obtained in Carburizing

Samples of various "normal" and "abnormal" steels, submitted to the Bureau of Standards by manufacturers, have been carburized and examined microscopically. The structural characteristics of these carburized steels confirm the contention that there is a difference in the "carburizing properties" of steels which show but little difference in their composition as ordinarily determined. These differences consist in variations in the average depth of penetration, as well as in the character of the pearlite. The real significance of the differences, so far as commercial practice is concerned, is still a matter of surmise. The work is being continued, and special attention will be given to the "carburizing behavior" of a set of irons containing unusual impurities such as oxides, nitrogen, etc.

## Canadian Scrap Reactive

TORONTO, ONT., Nov. 20.—Iron and steel scrap sales during the past week or ten days have been confined to small tonnages for immediate delivery. Consumers are buying in small tonnages and are interested only in such material as is required for immediate needs. Steel plants are entering the market from time to time for heavy melting steel and turnings, but on the whole the movement of these commodities is comparatively slow. The recent decline in the price of pig iron has been reflected in scrap prices and as a result the dealers have reduced their buying price on No. 1 machinery cast \$2 per net ton, in both Toronto and Montreal districts. While other lines of scrap are unchanged for the present, local dealers say that further softening is to be expected. Buying between dealers continues slow, but some movement is reported at prices below market levels.

Dealers' buying prices are as follows:

|                             | Toronto    | Montreal |
|-----------------------------|------------|----------|
|                             | Gross Tons |          |
| Steel turnings .....        | \$10.00    | \$7.00   |
| Machine shop turnings ..... | 10.00      | 7.00     |
| Wrought pipe .....          | 8.00       | 8.00     |
| Rails .....                 | 12.00      | 13.00    |
| No. 1 wrought scrap .....   | 14.00      | 14.00    |
| Heavy melting steel .....   | 12.00      | 11.50    |
| Steel axles .....           | 15.00      | 18.00    |
| Axles, wrought iron .....   | 18.00      | 20.00    |
|                             | Net Tons   |          |
| Standard car wheels .....   | \$15.00    | \$16.00  |
| Malleable scrap .....       | 15.00      | 16.00    |
| Stove plate .....           | 15.00      | 16.00    |
| No. 1 machinery cast .....  | 18.00      | 18.00    |

The Detroit Purchasing Agents' Association will hold a meeting Nov. 24 at which Prof. W. V. Bingham, director of the division of cooperative research of the Carnegie Institute of Technology will deliver an address on the "Intelligence of Business Success." In addition, W. L. Steffens, civil engineer of the Cary Co., Lockland, Ohio, will speak on "Heat Conservation" and C. H. Walker, general sales manager of the same company, will delineate "Fifty Years of Progress in the Roofing Industry."

John S. Pendleton, 52 Vanderbilt Avenue, New York, has been appointed Eastern sales agent by the Columbia Steel Co., Elyria, Ohio, manufacturer of cold-rolled strip steel. Mr. Pendleton also represents the Falcon Steel Co., Niles, Ohio; the Falcon Tin Plate Co., Canton, Ohio; the Franklin Steel Works, Franklin, Pa., and the Standard Gage Steel Co., Beaver Falls, Pa.

# Iron and Steel Markets

## OVER 600,000 TONS

### Great Pig Iron Buying Movement at Still Lower Prices

#### Rail and Tin Plate Mills Well Booked for First Half—Large New Car Program

The increased demand for pig iron which was the market feature a week ago has broadened into one of the largest buying movements in many months. The week's total is put at 600,000 to 650,000 tons, much of this iron going at prices under last week's low level. Several producers, after acting on the old Carnegie formula that the way to lift the market is to get under it, have now raised their prices by 50 cents to \$1 a ton, but such advances have not been established and the price situation is yet to be clarified.

In a total of nearly 450,000 tons booked by Northern and 200,000 tons by Southern furnaces, the largest lot was 50,000 tons bought at Buffalo by the American Radiator Co. At Chicago some foundries bought for the first half of 1924, but almost all the iron taken is for delivery up to April 1.

While the buying has been very heavy, the movement has been carried on in a conservative way and some important melters have not yet entered the market. Buffalo sellers have been aggressive and have sold at distant points. Speculative buying seems to be confined to Pittsburgh. Steel making grades have formed a small part of the great total of the week.

The finished steel market, in contrast with the activity in pig iron, continues to show the effect of restricted buying. Operations are at a less rate, being scaled down rather more in the Chicago district than elsewhere, and apart from tin plate bookings, which have been heavy, new business is not quite up to the October rate.

However, a better view is taken of prospects for 1924, as the total of railroad cars being planned for grows and the building and automobile outlook continues favorable.

Inquiries and steel company estimates now put prospective railroad car business at 94,000. Included are 10,000 to 11,000 cars for the Southern Pacific, 6000 for the Norfolk & Western, 3000 for the Pacific Fruit Express and an unnamed number for the Pennsylvania Railroad.

Eastern mills are interested in an inquiry the Chesapeake & Ohio has made for 14,000 tons of plates, 8000 tons of shapes and 860 tons of bars, for the 2000 cars to be built for its account.

After booking orders for 6,000,000 base boxes of tin plate for the American Can Co. and 1,500,000 boxes for the Continental Can Co., tin plate mills

are assured of full activity through the first half of 1924.

It now appears that most of the rail mills are booked practically full to July, 1924. The Pennsylvania rail orders are 94,000 tons each to the Steel Corporation and the Bethlehem Steel Co. and 12,000 tons to the Inland Steel Co. The Baltimore & Ohio has bought 10,000 tons of tie plates.

Some of the pending foreign rail business—18,000 tons for Chile, 12,000 tons for Japan and 7000 tons for Brazil—is likely to be placed here.

Awards of fabricated steel for 15 projects did not exceed 11,000 tons, but 41,500 tons of new work has appeared. Of this 10,000 tons is for the new Palmer House, Chicago, and 20,100 tons is for the Ford Motor Co., in addition to 10,800 tons already pending.

Fabricated steel bookings in October were the smallest in 20 months—120,000 tons, against 132,500 tons in September. The year 1923 promises to be somewhat better than 1922 and both will rank next to 1915 and 1916.

Japanese inquiry in Great Britain for black sheets has fallen off, but the mills are sold out until June. Japan's purchases of black sheets in the United States amount to 70,000 tons.

THE IRON AGE finished steel composite price remains at 2.775c. per lb., after 29 weeks of stabilized prices for the leading products. One year ago it had held close to 2.44c. for eleven weeks.

For the twelfth successive week THE IRON AGE pig iron composite price has fallen, being now \$20.77 per gross ton, against \$20.94 last week and \$27.61 one year ago.

## Pittsburgh

### Price Concessions Encourage Pig Iron Buying—Improvement in Steel Expected

PITTSBURGH, Nov. 20.—While the past week has seen further declines in pig iron prices of from 50c. to \$1 a ton, carrying the market back to about the levels of March, 1922, the new level has aroused such a large demand that it now looks as if a turn had come. Sales for the week have been fully 50,000 tons of the various grades, and although all of this tonnage does not represent buying by consumers, a goodly part of the total is thus accounted for, and speculative purchases are helpful to the immediate situation in that they mean a wider distribution of supplies and the virtual elimination of the danger from large stocks concentrated in a few hands.

Although the decline in pig iron prices from the high point of the year, which now averages about \$10 a ton, has not been an influential factor in the steel market, the more common tendency among merchant producers of pig iron is to charge the decline to steel company selling of pig iron because of the tapering demand for steel. While present pig iron prices show a loss to the average producer, they provide a slight



## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics  
At date, one week, one month, and one year previous

For Early Delivery

| Pig Iron, Per Gross Ton:    | Nov. 20, 1923 | Nov. 13, 1923 | Oct. 23, 1923 | Nov. 21, 1922 |
|-----------------------------|---------------|---------------|---------------|---------------|
| No. 2X, Philadelphia...     | \$22.64       | \$22.64       | \$23.76       | \$30.14       |
| No. 2, Valley furnace...    | 21.00         | 22.00         | 23.00         | 27.50         |
| No. 2, Southern, Cin'tit... | 23.05         | 23.05         | 24.05         | 27.05         |
| No. 2, Birmingham, Ala...   | 19.00         | 19.00         | 20.00         | 23.00         |
| No. 2 foundry, Chicago*     | 23.00         | 22.50         | 25.00         | 30.00         |
| Basic, del'd, eastern Pa... | 22.75         | 23.00         | 24.50         | 27.50         |
| Basic, Valley furnace...    | 20.00         | 20.50         | 23.00         | 27.50         |
| Valley Bessemer, del. P'gh. | 24.26         | 24.76         | 26.76         | 33.27         |
| Malleable, Chicago*         | 23.00         | 22.50         | 25.00         | 30.00         |
| Malleable, Valley           | 19.00         | 20.00         | 22.50         | 29.00         |
| Gray forge, Pittsburgh...   | 22.26         | 23.26         | 24.76         | 28.77         |
| L. S. charcoal, Chicago...  | 28.15         | 28.15         | 30.04         | 36.15         |
| Ferromanganese, furnace...  | 107.50        | 110.00        | 110.00        | 100.00        |

### Rails, Billets, Etc., Per Gross Ton:

|                                |         |         |         |         |
|--------------------------------|---------|---------|---------|---------|
| O.-h. rails, heavy, at mill... | \$43.00 | \$43.00 | \$43.00 | \$43.00 |
| Bess. billets, Pittsburgh...   | 40.00   | 40.00   | 40.00   | 38.00   |
| O.-h. billets, Pittsburgh...   | 40.00   | 40.00   | 40.00   | 38.00   |
| O.-h. sheet bars, P'gh...      | 42.50   | 42.50   | 42.50   | 38.00   |
| Forging billets, base, P'gh.   | 45.00   | 45.00   | 47.50   | 45.00   |
| O.-h. billets, Phila...        | 45.17   | 45.17   | 45.17   | 43.17   |
| Wire rods, Pittsburgh...       | 51.00   | 51.00   | 51.00   | 45.00   |
| <b>Cents</b>                   |         |         |         |         |
| Skelp. gr. steel, P'gh, lb...  | 2.35    | 2.40    | 2.40    | 2.00    |
| Light rails at mill...         | 2.25    | 2.25    | 2.25    | 2.00    |

### Finished Iron and Steel,

| Per Lb. to Large Buyers:   | Cents | Cents | Cents | Cents |
|----------------------------|-------|-------|-------|-------|
| Iron bars, Philadelphia... | 2.67  | 2.67  | 2.67  | 2.275 |
| Iron bars, Chicago...      | 2.40  | 2.40  | 2.40  | 2.50  |
| Steel bars, Pittsburgh...  | 2.40  | 2.40  | 2.40  | 2.00  |
| Steel bars, Chicago...     | 2.50  | 2.50  | 2.50  | 2.10  |
| Steel bars, New York...    | 2.74  | 2.74  | 2.74  | 2.34  |
| Tank plates, Pittsburgh... | 2.50  | 2.50  | 2.50  | 2.00  |
| Tank plates, Chicago...    | 2.60  | 2.60  | 2.60  | 2.30  |
| Tank plates, New York...   | 2.74  | 2.74  | 2.74  | 2.34  |
| Beams, Pittsburgh...       | 2.50  | 2.50  | 2.50  | 2.00  |
| Beams, Chicago...          | 2.60  | 2.60  | 2.60  | 2.20  |
| Beams, New York...         | 2.74  | 2.74  | 2.74  | 2.34  |
| Steel hoops, Pittsburgh... | 3.00  | 3.15  | 3.15  | 2.75  |

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

| Sheets, Nails and Wire,               | Nov. 20, 1923 | Nov. 13, 1923 | Oct. 23, 1923 | Nov. 21, 1922 |
|---------------------------------------|---------------|---------------|---------------|---------------|
| <b>Per Lb. to Large Buyers: Cents</b> |               |               |               |               |
| Sheets, black, No. 28, P'gh.          | 3.75          | 3.75          | 3.75          | 3.35          |
| Sheets, galv., No. 28, P'gh.          | 4.85          | 5.00          | 5.00          | 4.35          |
| Sheets, blue an'd, 9 & 10             | 3.00          | 3.00          | 3.00          | 2.50          |
| Wire nails, Pittsburgh...             | 3.00          | 3.00          | 3.00          | 2.70          |
| Plain wire, Pittsburgh...             | 2.75          | 2.75          | 2.75          | 2.45          |
| Barbed wire, galv., P'gh...           | 3.80          | 3.80          | 3.80          | 3.35          |
| Tin plate, 100-lb. box, P'gh.         | \$5.50        | \$5.50        | \$5.50        | \$4.75        |

### Old Material, Per Gross Ton:

|                             |         |         |         |         |
|-----------------------------|---------|---------|---------|---------|
| Carwheels, Chicago...       | \$18.00 | \$17.50 | \$17.50 | \$24.50 |
| Carwheels, Philadelphia...  | 17.50   | 17.50   | 19.00   | 20.00   |
| Heavy steel scrap, P'gh...  | 16.50   | 16.00   | 15.00   | 20.50   |
| Heavy steel scrap, Phila... | 15.50   | 15.00   | 15.00   | 16.00   |
| Heavy steel scrap, Ch'go... | 14.00   | 14.00   | 13.75   | 17.00   |
| No. 1 cast, Pittsburgh...   | 18.50   | 18.50   | 18.50   | 23.00   |
| No. 1 cast, Philadelphia... | 19.00   | 19.00   | 19.00   | 20.00   |
| No. 1 cast, Ch'go (net ton) | 18.50   | 18.00   | 18.50   | 20.50   |
| No. 1 RR. wrot. Phila...    | 17.50   | 17.00   | 17.00   | 19.00   |
| No. 1 RR. wrot. Ch'go (net) | 12.50   | 12.50   | 12.50   | 15.50   |

### Coke, Connellsville, Per Net Ton at Oven:

|                         |        |        |        |        |
|-------------------------|--------|--------|--------|--------|
| Furnace coke, prompt... | \$3.75 | \$3.75 | \$3.75 | \$7.25 |
| Foundry coke, prompt... | 4.75   | 4.75   | 4.75   | 8.00   |

### Metals,

| Per Lb. to Large Buyers:      | Cents | Cents  | Cents  | Cents  |
|-------------------------------|-------|--------|--------|--------|
| Lake copper, New York...      | 13.50 | 13.50  | 13.12½ | 14.12½ |
| Electrolytic copper, refinery | 12.75 | 13.25  | 12.50  | 13.62½ |
| Zinc, St. Louis...            | 6.30  | 6.45   | 6.32½  | 7.20   |
| Zinc, New York...             | 6.65  | 6.80   | 6.67½  | 7.55   |
| Lead, St. Louis...            | 6.70  | 6.55   | 6.55   | 6.90   |
| Lead, New York...             | 6.95  | 6.85   | 6.85   | 7.25   |
| Tin (Straits), New York...    | 44.25 | 44.37½ | 41.25  | 36.50  |
| Antimony (Asiatic), N. Y.     | 9.25  | 9.25   | 8.00   | 6.50   |

### Composite Price, Nov. 20, 1923, Finished Steel, 2.775c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets

These products constitute 88 per cent of the United States output of finished steel

|                          |         |
|--------------------------|---------|
| Nov. 13, 1923,           | 2.775c. |
| Oct. 23, 1923,           | 2.775c. |
| Nov. 21, 1922,           | 2.446c. |
| 10-year pre-war average, | 1.689c. |

### Composite Price, Nov. 20, 1923, Pig Iron, \$20.77 Per Gross Ton

Based on average of basic and foundry iron, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

|                          |         |
|--------------------------|---------|
| Nov. 13, 1923,           | \$20.94 |
| Oct. 23, 1923,           | 22.96   |
| Nov. 21, 1922,           | 27.61   |
| 10-year pre-war average, | 15.72   |

margin of profit to the self-contained steel companies, several of which are short of steel business. The fact that the pig iron market has developed so much activity and seemingly has struck bottom, together with the stronger tendency in the scrap market, strengthens expectations of an early revival in steel business.

Evidence that steel consumers and distributors have abandoned the hand-to-mouth buying policy is lacking, although in most directions actual requirement purchases for the past week show some increase as compared with the previous seven days. The trade here still places greatest reliance in a business recovery on railroad buying, although it is now believed that the demand from this source will run greater in the direction of rails and track accessories, bridges and terminals, than in new rolling stock, with which most roads now appear to be amply supplied. The outlook is for a good structural business for next spring, and the automotive industry is expected some time in the

near future to adopt a more liberal buying policy. In all cases, however, the question of prices is an important one with consuming interests, which seem to be waiting upon lower prices before going ahead.

Considerable irregularity and weakness is evident in the sheet market, with price cutting no longer on the part of the few as was the case a few weeks back. Cold-finished steel bars, hot-rolled flats, bolts, nuts and rivets and spikes also reflect in price the need of orders on the part of producers. It is commented upon frequently that the liquidation of steel stocks by consumers and distributors has been pretty drastic, and that the situation in this respect is fraught with danger from a supply standpoint, particularly as a strike of the soft coal miners looms up as an April 1 possibility. It is also pointed out that the working down of inventories is voluntary, and has not been forced by financial consideration. Correction of the conditions created by the overproduction of copper and crude oil also is viewed as a helpful factor in the situation, and if there

has been any overproduction of iron and steel it also is being amended by a lower rate of producing capacity. Steel corporation steel work operations still are above 80 per cent in this district, but the independent average ranges somewhere between 60 and 70 per cent. There has been a drop in the number of active blast furnaces in this and nearby districts from 126 in mid-summer to 95 today out of a total of 141 furnaces.

**Pig Iron.**—The past week stands out as one of the most active, if indeed not the most active of any this year. While speculative buying accounts for a very substantial part of the business closed, known sales to consumers reach a total of 25,000 tons. Low prices have been made in effecting the business, but the common feeling is that the situation has been bettered by the interest created by the lower prices. The largest demand has been in foundry iron, but there has been a goodly representation of other grades in this week's transactions. A large sanitary ware manufacturing company has closed for approximately 10,000 tons of iron, paying \$21 Valley furnace for No. 2, and No. 2X iron for its nearby plants and \$18.50, Birmingham, for the base grade for its southern plants. All of this iron is for November and December delivery. A large rolling mill and machinery company has bought 7000 tons of iron for delivery beginning immediately and extending into the first quarter from a western Pennsylvania steel company, the transaction including 3000 tons of foundry iron at \$21, furnace, 3000 tons of Bessemer at \$23, and 1000 tons of low phosphorus iron at \$27. A Johnstown radiator company with plants also at Newcastle, Pa., and Trenton, N. J., has bought 1500 tons of foundry iron for each of the three plants at a delivered price of \$21.50 at Johnstown and Newcastle, which means \$21 at seller's furnaces. A local maker of steel castings has closed for 1500 tons of Bessemer at \$22.50, Valley furnace, base, and there was also a sale to a Wheeling melter at the same price. Sales of malleable iron to consumers have been made as low as \$19, Valley furnace, and speculative sales aggregating more than 10,000 tons at from \$19 to \$19.50 also are noted. There have been scattering sales of foundry iron as high as \$21.50 for the base grade, of Bessemer iron at \$23.50 and some holders of basic iron still are naming \$22 on this grade. Merchant producers, generally, are disinclined to take on business for first quarter delivery at today's prices, believing that more profitable prices are ahead. Basic iron has receded to \$20, Valley furnace, on a sale of 2000 tons to a Valley melter.

(Note—Through an error in transmission, the price of No. 2 foundry of last week was carried at \$20; the correct price was \$22. In the table captioned, "A comparison of prices," the price of Valley Bessemer iron delivered at Pittsburgh was given last week as \$26.26; the correct price was \$24.76.)

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

|                                   |                    |
|-----------------------------------|--------------------|
| Basic .....                       | \$20.00 to \$21.00 |
| Bessemer .....                    | 22.50 to 23.50     |
| Gray forge .....                  | 20.50 to 21.00     |
| No. 2 foundry .....               | 21.00 to 21.50     |
| No. 3 foundry .....               | 20.50 to 21.00     |
| Malleable .....                   | 19.00 to 20.00     |
| Low phosphorus, copper free ..... | 30.00              |

**Ferroalloys.**—Although both domestic and British makers of ferromanganese continue to quote \$110, Atlantic seaboard, recent offerings of resale material down to as low as \$107.50 have been regarded as legitimate competition, and the price has been met by some makers. It is understood that several good-sized tonnages were disposed of at that figure. The campaign for 1924 contracts in 50 per cent ferrosilicon is getting under way to some extent, although the larger producers have not yet announced prices. A price of \$79, delivered, is said to have been quoted by one maker and the more common impression is that the 1924 market will open near that price. Current demand for this material is very light. Prices are given on page 1417.

**Semi-Finished Steel.**—Demands are light, as is rather to be expected in view of the fact that buying of finished products is so generally on a hand-to-mouth basis, but there is not much selling pressure, and prices hold at the recent levels. Some makers still are talking \$42.50 on billets and slabs, as well as on sheet

bars, but the most recent business in billets has been at \$40 and it is believed other tonnages are available at that figure. The skelp market is slightly easier, being quotable at 2.35c. to 2.40c., as against 2.40c., the former quotation. There is so little demand for skelp that prices are purely nominal. Demand for wire rods runs entirely to small lots for early delivery, but most makers are able to get enough of such orders to maintain a fairly full operating schedule and are not disposed to augment their bookings at the expense of prices. Prices are given on page 1417.

**Wire Products.**—Buyers still are confining their purchases closely to actual requirements, and while orders, both numerically and in size, show some increase over the past two weeks, the mills are not accumulating much backlog business and most of them are pretty well abreast of their obligations. The outlook is not very brilliant for a high rate of mill operation on orders in December. This prospect probably explains the fact that most mills in the past week advised the trade that woven fence prices would be guaranteed against a decline up to June 1, 1924. Announcement some time ago of a spring dating on fence orders failed to stimulate buying to any appreciable extent, presumably because of expectations of lower prices. Since manufacturers do not have storage capacity to take care of much production, the idea of a price guarantee is to get the dealers and jobbers to take out their tonnages before the spring demand develops. It is stated that this guarantee may be withdrawn any time without notice. There is still some shading of regular prices on coated nails, but there is pretty close observance of quoted prices of other products. Prices are given on page 1416.

**Steel Rails.**—Activity still is lacking in billet light rails, but makers still are quoting 2.25c., base, uniformly and appear content to pass up business rather than cut that price. The soft coal situation still is unsatisfactory both from the sales and price standpoints to the mine operators and they are curtailing production; the need of new rails is declining accordingly. Prices at which rerolled rails are selling, it is claimed, are too far below costs to allow makers of billet rails to compete.

We quote light rails rolled from billets at 2.25c. base (25-lb. to 45-lb.); rerolled rails, 1.85c. to 2c. base (12-lb. to 45-lb.), f.o.b. mill; standard rails, \$43 per gross ton mill, for Bessemer and open-hearth sections.

**Tubular Goods.**—Mills generally have sufficient live business in pipe to permit a relatively high rate of operation, but new business is light in all classes of goods. Considerable pressure still is being exerted by distributors of standard pipe for deliveries for the rounding out of stocks and there also is a pretty strong demand for shipment of galvanized pipe, which it is believed is wanted for the completion of buildings started late in the summer or early fall. With the decrease in crude oil production in California, it is believed the oil market is due for a turn and there are hopes of a revival in the demand for oil well pipe soon after the first of the new year. Boiler tubes are slow of sale and most makers are nearing the end of their orders, since shipments for some time have been running substantially in excess of incoming business. Shading of prices is not uncommon in boiler tubes and is reported on a recent order for some 10-in. line pipe for California delivery, but in other respects the market appears fairly firm at quotations. Discounts are given on page 1416.

**Sheets.**—There has been no definite improvement in business and the number of mills that are departing from the regular market prices has grown considerably in the past week or so. It is a matter of some concern to the larger independent units that so much of the passing business is going to the smaller producers, most of whom are naming prices at which orders can be secured. The leading interest claims to be getting a fairly good run of quick shipment orders for small tonnages at the full quotations, but this is not the case with the independent mills observing the Steel Corporation prices. Buyers are encouraged to pursue a cautious purchasing policy by the fairly well established fact that prices above those now quoted by the



Steel Corporation are unlikely in the near future, while on current requirements they are able to secure supplies for an increased number of sources at substantial concessions. Present minimum quotations of 3.75c., base, for black, 4.85c., base, for galvanized, and 2.90c., base, on blue annealed are not always as low as some mills are willing to go to get desirable orders. Concessions on tin mill black plate are not being made to any considerable extent and on automobile body sheets there is relatively good observance of the regular price. The American Sheet & Tin Plate Co. is operating about 80 per cent of its sheet mills, which compares with the independent average of about 60 per cent. Prices are given on page 1416.

**Tin Plate.**—Orders entered lately by the American Sheet & Tin Plate Co. will take care of all the possible production over the first half of 1924 and since there are bound to be some interruptions to mills' operations, it is probably a safe prediction that its present obligations will extend into the third quarter of the year. The requirements of the largest can company in the country, which for the first half of the year amount to close to 1,000,000 boxes a month, are included in the orders of that company. Independent companies are not as well off in respect to bookings as the leading interest, but indications are that they will have all the business they can take care of during the first half of next year. If contracts are not yet coming to them freely, it is because consumers have not yet completed their estimates of their 1924 requirements. The price is a fixture at \$5.50 per base box, Pittsburgh, for the first quarter.

**Cold-Finished Steel Bars and Shafting.**—This line is dull and easy. While the common quotation of all makers in this district is 3c., base, it is admitted that sales of any considerable size are not readily made at that figure, particularly in the Detroit district, where competition for orders by Middle Western mills is pretty sharp. Based on sales, the market is quotable from 2.90c. to 3c., base, according to the size of the order. Ground shafting holds at the recently established base of 3.40c., f.o.b. mill, for carload lots or more.

**Hot-Rolled Flats.**—While some makers still are naming a price of 3.15c., base, on hoops, bands and strips, sales at that price, even on hoops of the ordinary gages and widths are so infrequent that the market to all intents and purposes is fairly down to 3c., base. This implies 2.85c. for hot-rolled strips for cold rolling and for rim stock and on wide strips, for which a number of mills want orders, even less than that is being accepted. The cotton tie season is over. The crop turned out smaller than early estimates, but there are no signs that rollings exceeded the requirements or that there will be a considerable carryover either by the mills or warehouses into next year. Prices are given on page 1416.

**Track Supplies.**—Pending business in spikes, bolts and other track accessories is said to be heavy, but actual orders are small. Most makers of small spikes have cut base price to 3.25c., as against 3.50c., the former base, but even at the new level orders are moderate. On standard spikes, orders are lost as frequently as they are obtained at 3.15c., base. Quoted prices on track bolts are not readily obtained. Prices are given on page 1416.

**Bolts, Nuts and Rivets.**—Quoted prices on bolts and nuts still are asking rather than selling prices. Competition for orders still is sharp and prices are more of buyers' than of sellers' making. The rivet market is quotable at \$2.75, base, for heavy rivets, but concessions still are being made on attractive orders and the prevailing quotation on small rivets is 70 per cent off list. Prices and discounts are given on page 1416.

**Structural Material.**—Local mills are not yielding from 2.50c., Pittsburgh, on large structural shapes, although demands are very light in keeping with awards to local fabricating shops. Cases are known where the Chicago base has been named by nearby mills in territory where Chicago mills have a freight advantage. Prices are given on page 1416.

**Plates.**—Local mills are not getting many orders of any considerable size, but are adhering pretty firmly to

2.50c. base, Pittsburgh, on such business as is coming out of this territory. About 2000 tons of steel, mostly plates, is involved in 20 barges, bids for which have been asked by the Louisville office, U. S. Engineers, to close Nov. 23, and there are about 400 tons of steel for five barges being asked for by the Mobile office, U. S. Engineers, bids on which close Dec. 1. Prices are given on page 1416.

**Cold-Rolled Strips.**—Makers still are quoting 5c. base, and the need of orders has not yet become urgent enough for much shading of that figure.

**Iron and Steel Bars.**—Mills in this district still are holding to 2.40c. base, Pittsburgh, but are getting only a moderate amount of business and are losing some orders in a competitive territory East and West. Iron bars also are holding at recent prices, although the demand is limited.

We quote soft steel bars, rolled from billets, at 2.40c. base; bars for cold-finishing of screw stock analysis, \$3 per ton over base; reinforcing bars, rolled from billets, 2.40c. base; refined iron bars, 3.25c. base, in carload lots or more, f.o.b. Pittsburgh.

**Coke and Coal.**—The price of furnace coke remains for the fifth consecutive week at from \$3.75 to \$4 per net ton at oven. Offerings are very limited but so also is the demand, and curtailment of production which has been going on steadily for several weeks has served only to steady and not to strengthen prices. Spot foundry coke ranges from \$4.75 to \$5.50 with supplies and demand about equal. The coal market still is very sluggish and easy. Ending of the lake shipping season has reduced the demand for screened coal, and created some shortage of slack grade, the price of which has stiffened slightly. Demand is light for this grade, but so little is available that there is no longer much tonnage to be had at less than \$1.10 and small sales have been made at as high as \$1.25. Mine run steam coal ranges from \$1.35 to \$1.50 in the Connellsville district up to \$1.90 to \$2 for Panhandle coal. Mine run coking coal is quoted from \$1.75 to \$2.25, and gas coal commands \$2.25.

**Old Material.**—The market here continues to gather strength, due not so much to active consumer buying as to the fact that dealers find it hard to secure supplies at prices that will permit a profit on mill bids and are disposed to refrain from selling. Weirton Steel Co. and the Pittsburgh Crucible Steel Co. were recent buyers of heavy melting steel, paying \$16.50, while Edgewater Steel Co. went as high as \$17 for a few hundred tons of this grade. The market on this grade is, therefore, quotable from \$16.50 to \$17, but dealers today would hardly accept the lower figure, except on such material as they had lined up and have much higher ideas as to the value of their yard stocks. The market also is firmer on compressed sheets, one user of which has raised his bid to \$15, as against \$14.50, recently. Efforts of dealers to cover against short sales are responsible for a firmer market in some of the lighter grades. Heavy breakable cast is stronger, but cast iron wheels find only a limited outlet and the price is easier.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

| Per Gross Ton   |                    |
|---|--------------------|
| Heavy melting steel.....  | \$16.50 to \$17.00 |
| No. 1 cast, cupola size.....  | 18.50 to 19.00     |
| Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va. and Franklin, Pa. .... | 18.00 to 18.50     |
| Compressed sheet steel.....   | 14.50 to 15.00     |
| Bundled sheets, sides and ends..  | 13.00 to 13.50     |
| Railroad knuckles and couplers..  | 18.50 to 19.00     |
| Railroad coil and leaf springs..  | 18.50 to 19.00     |
| Low phosphorus blooms and billet ends .....   | 20.50 to 21.00     |
| Low phosphorus plate and other material .....   | 19.00 to 19.50     |
| Railroad malleable .....  | 17.50 to 18.00     |
| Steel car axles.....  | 18.00 to 18.50     |
| Cast iron wheels.....   | 17.00 to 17.50     |
| Rolled steel wheels.....  | 18.50 to 19.00     |
| Machine shop turnings.....  | 12.00 to 12.50     |
| Sheet bar crops .....   | 18.50 to 19.00     |
| Heavy steel axle turnings.....  | 14.00 to 14.50     |
| Short shoveling turnings.....   | 13.00 to 13.50     |
| Heavy breakable cast.....   | 16.50 to 17.00     |
| Stove plate .....   | 14.00 to 14.50     |
| Cast iron borings.....  | 13.00 to 13.50     |
| No. 1 railroad wrought.....   | 13.50 to 14.00     |
| No. 2 railroad wrought.....   | 16.50 to 17.00     |

## Chicago

### Pig Iron Sales Amount to 150,000 Tons— Inquiry for Many Cars

CHICAGO, Nov. 20.—The iron and steel market situation is a study in contrasts. After a long period of declining prices and hand-to-mouth buying pig iron contracting has been unusually heavy, sales for the week amounting to fully 150,000 tons. These commitments cover not only the remainder of the year, but in many cases extend over first quarter and first half. Under the stimulus of demand prices have advanced from 50c. to \$1 a ton.

Buying of finished steel, on the other hand, shows little, if any, improvement, and with the end of the year drawing near, consumers may continue to hold back in order to keep their inventories down to a minimum.

Slow demand has found further reflection in curtailed mill operations. The Illinois Steel Co. has blown out one furnace each at Gary and at South Chicago, thereby reducing the number of its active stacks to 19 out of 27 steel works furnaces. The company's steel output has declined to 75 per cent of ingot capacity. Notwithstanding losses in output local mill prices remain firm on plates, shapes and bars. Hoops and bands, as well as sheets, continue to show weakness, but on the whole the market is remarkably steady. Mills find particular encouragement in the appearance of definite inquiries for a large number of freight cars. The Southern Pacific has entered the market for 6500 and the St. Louis Southwestern for 1000. Blue prints and specifications for 3000 refrigerator cars for the Pacific Fruit Express have been completed and inquiries will be issued in a day or two. Before the close of the current week the Southern Pacific is expected to issue additional inquiries for 3500 cars.

**Ferroalloys.**—A local buyer is inquiring for 300 to 500 tons of ferromanganese for first quarter delivery. No orders have been reported during the week; hence the price situation is uncertain. There has been no activity in either spiegeleisen or 50 per cent ferrosilicon.

We quote 80 per cent ferromanganese, \$115.38 to \$117.56; delivered; 50 per cent ferrosilicon, \$82, delivered; spiegeleisen, 18 to 22 per cent, \$43.80, delivered.

**Pig Iron.**—The past week has seen the heaviest buying for many months. Bookings by local sellers exceed 150,000 tons for the seven-day period and sales during the coming week promise to be correspondingly heavy. Much of the tonnage bought is for first quarter and first half, indicating that melters are anxious to contract ahead at present prices. Under the stimulus of demand the market has stiffened and on prompt deliveries the lowest going price is \$23, base local furnace, while for first quarter \$23.50, furnace, is the minimum. Producers are not particularly anxious to take business for second quarter shipment at this time, but have booked some orders at \$24, base furnace. That Southern furnaces are also heavily committed is indicated by the fact that two of the largest producers have withdrawn from the market. Apparently the lowest available price on Southern iron today is \$19.50, Birmingham, or \$25.51, delivered Chicago. The Canadian furnace has also withdrawn from the market. There is still a large tonnage of iron on inquiry which has not yet been placed. A Milwaukee melter, for instance, is in the market for 10,000 to 12,000 tons of malleable, representing requirements for the entire coming year. A strong buying movement is under way and factors which worked for extreme weakness ten days ago are no longer operative. The increasingly heavy offerings of steel works furnaces, as well as those of outside stacks in Buffalo, Canada and the South, have created a highly competitive situation in which all advantage lay with the buyer. So much ton-

nage has been absorbed in the past week, however, that the market is now on a firm footing. Buying of charcoal has also been on a liberal scale. A northern Indiana melter has closed for 1000 tons of charcoal. Inquiries for low phosphorus have been limited to a few carload lots. Prices range from \$29.50 to \$30, Valley furnace.

Quotations on Northern foundry high phosphorus malleable and basic irons are f.o.b. local furnace and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumer's yard or when so indicated, f.o.b. furnace other than local.

|   |                  |
|---|------------------|
| Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago.. | \$28.15          |
| Northern coke, No. 1 sil. 2.25 to 2.75 .....                        | \$23.50 to 24.00 |
| Northern coke, foundry, No. 2, sil. 1.75 to 2.25 .....              | 23.00 to 23.50   |
| Malleable, not over 2.25 sil. ....                                  | 23.00 to 23.50   |
| Basic .....   | 23.00 to 23.50   |
| High phosphorus .....   | 23.00 to 23.50   |
| Southern No. 2 .....  | 25.51            |
| Low phos., sil. 1 to 2 per cent, copper free .....                  | 34.29 to 34.79   |
| Silvery, sil. 8 per cent .....                                      | 37.29            |

**Plates.**—Mills are encouraged by the appearance of inquiries from the Southern Pacific and the St. Louis Southwestern for a total of 7500 cars. Before the close of the week, formal inquiries for 3500 additional cars for the Southern Pacific and 3000 cars for the Pacific Fruit Express will probably be in the hands of car builders. This will bring the total of new inquiries up to 14,000 cars, involving 140,000 tons of steel, largely plates. Plate bookings during the week have been light. A mill east of here took an order for 300 tons from a local buyer at a price of 2.50c., delivered, or \$2 a ton under the price of Chicago mills. Local producers, however, have been holding firmly to their quotations and there are no indications that they will deviate from that policy. Recent oil storage tank orders have been small. The Standard Oil Co. has placed 13 tanks involving 600 tons for erection at Casper, Wyo., with the Graver Corporation, but has further orders to place for that location. The Sinclair Refining Co. has awarded a number of acid tanks for East Chicago, requiring 240 tons, to the Graver Corporation.

The mill quotation is 2.60c., Chicago. Jobbers quote 3.30c. for plates out of stock.

**Sheets.**—A local mill has booked additional Japanese orders for black sheets, amounting to about 2000 tons. January delivery is called for. Domestic demand for sheets shows a little more life, although the price situation is still weak. On galvanized sheets, 4.85c. Pittsburgh is rather commonly quoted by the smaller producers, but on black 3.65c., base Pittsburgh, is still an exceptional figure. Blue annealed remains steady at 3c., base Pittsburgh.

Mill quotations are 3.75c. to 3.85c. for No. 28 black, 3c. for No. 10 blue annealed and 4.85c. to 5c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote, f.o.b. Chicago, 4c. for blue annealed, 4.70c. for black and 5.85c. for galvanized.

**Cast Iron Pipe.**—The United States Cast Iron Pipe & Foundry Co. has booked 375 tons for Thornton, Ill., and 75 tons for Hammond, Ind. Detroit takes bids today on 2421 tons of 12-in., class C, 1881 tons of 8-in., class B, and 100 tons of 24-in., class C, water pipe. Prices still show considerable variation, according to deliveries desired. The lowest figure recently reported was \$46.90, base Birmingham, which covered extended delivery.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., \$59.20 to \$60.20; 6-in. and above, \$55.20 to \$56.20; class A and gas pipe, \$5 extra.

**Reinforcing Bars.**—Few lettings exceeding 100 tons each were reported during the week, but considerable new work is coming up for figures. Fully 1000 tons of bars are still to be bought for Illinois road work, on which general contracts have been placed. Close to 2000 tons additional will be required in seven bridges and 169 miles of road work to be awarded to general contractors at Springfield, Ill., Nov. 22. An assembly plant for the Ford Motor Co. at Kansas City, Mo., will require approximately 500 tons. The superstructure



for the Milwaukee Journal Building, Milwaukee, involving about 400 tons, is expected to be placed shortly. Prices on concrete bars have generally advanced to 3c., Chicago warehouse.

#### Lettings include:

Luick Ice Cream Co., Milwaukee, garage, 160 tons to Corrugated Bar Co.

Apartment building, Battle Creek, Mich., 150 tons to Kalman Steel Co.

Seven-story apartment hotel for A. C. Lee, Detroit, Mich., 115 tons to McRae Steel Co.

Metallurgy building for the School of Mines, Houghton, Mich., 110 tons to Corrugated Bar Co.

#### Pending business includes:

Illinois State highway work, 1000 tons.

Seven bridges and 169 miles of concrete highway for the State of Illinois; bids on general contract to be taken at Springfield, Ill., Nov. 22, 2000 tons.

Curtis Automobile Co. garage, Milwaukee, 170 tons.

Ford Motor Co. assembly plant, Kansas City, Mo., 500 tons.

Two high school buildings, Appleton, Wis., 150 tons.

Shrine Temple, Fort Wayne, Ind., 200 tons, bids on general contract rejected and plans to be revised.

Sanitary district, Chicago, McCormick Highway, 700 tons, bids on general contract rejected and new figures asked.

**Rails and Track Supplies.**—Outside of miscellaneous orders for 6000 tons of rails, no additional business in standard sections has been taken by local mills. New commitments in track supplies have also been small, but an unusually large inquiry for tie plates, angle bars, spikes and bolts is expected to appear shortly.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled steel, 2.25c., f.o.b. makers' mills. Standard railroad spikes, 3.25c. mill; track bolts with square nuts, 4.25c. mill; iron tie plates, 2.75c. mill; steel tie plates, 2.60c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.90c. base, and track bolts, 4.90c. base.

**Bolts and Nuts.**—Demand shows no improvement and the price situation is soft. On large machine bolts 60 and 10 and 10 off, f.o.b. Chicago, is not an uncommon discount. On large rivets as low as \$2.65, f.o.b. Pittsburgh, has been done.

Jobbers quote structural rivets, 4c.; boiler rivets, 4.20c.; machine bolts up to  $\frac{3}{4}$  x 4 in., 55 and 5 per cent off; larger sizes, 55 and 5 off; carriage bolts up to  $\frac{3}{4}$  x 6 in., 50 and 5 off; larger sizes, 50 and 5 off; hot pressed nuts, squares and hexagons, tapped, \$3.50 off; blank nuts, \$3.50 off; coach or lag screws, gimlet points, square heads, 60 and 5 per cent off.

**Structural Material.**—Fabricating awards for the week involved a relatively small tonnage, but business in prospect is most promising. Locally, preliminary figures have been taken on the Union League Club building, involving 5300 tons, and bids are expected to be asked early in December on the Chicago Tribune Building, requiring 5000 tons, and the new Palmer House, taking 10,000 tons. The building program of the Ford Motor Co. alone is a large one. At St. Paul it has asked for new figures on an assembly plant, which, according to revised plans, will require 6000 tons. Other projects on which it has asked bids include additional units for its steel plant at River Rouge, Mich., involving 10,000 tons, a press shop and forge shop at River Rouge, 9700 tons, and an assembly plant at Kansas City, 400 tons. An assembly plant at Philadelphia, requiring 4500 tons, on which figures have been taken, remains unlet. The Northern Pacific has received bids on miscellaneous bridges, involving 1700 tons.

The mill quotation on plain material is 2.60c., Chicago. Jobbers quote 3.30c. for plain material out of warehouse.

**Bars.**—While expectation of lower prices may have held back buying of soft steel bars, probably a more important present influence to that end is a common desire to enter the new year with low inventories. Current orders are of a desultory character and cover immediate needs almost exclusively. Local prices on mild steel bars remain firm. Demand for bar iron shows no improvement and mills are operating intermittently or on a sharply curtailed basis. Practically the same

situation holds true of rails and steel bars, but prices of both commodities remain unchanged.

Mill prices are: Mild steel bars, 2.50c., Chicago; common bar iron, 2.40c., Chicago; rail steel, 2.30c., Chicago mill.

Jobbers quote 3.20c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 4.55c. for rounds and 5.05c. for flats, squares and hexagons.

Jobbers quote hard and medium deformed steel bars at 3c. base; hoops, 4.55c.; bands, 3.95c.

**Wire Products.**—While no material increase in mill bookings is looked for in November and December, sentiment is improved to the extent that prospects for first quarter business are regarded as good and present prices are expected to remain unchanged. For mill prices see finished iron and steel, f.o.b. Pittsburgh, page 1416.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, \$3.90 per 100 lb.; extra for black annealed wire, 15c. per 100 lb.; common wire nails, \$3.80 per 100 lb.; cement coated nails, \$3.25 per keg.

**Warehouse Prices.**—Local jobbers have reduced their prices on small rivets and on bolts and nuts. Small rivets in keg lots are now quoted at 60 per cent off and in less than keg lots at 55 off. The new bolt and nut quotations are given under the bolt and nut paragraph. Local warehouses report that business from the city is keeping up, while orders from country points are falling off. The open winter has permitted building operations to go forward without interruption, thereby sustaining demand for building materials. Bookings, however, are well diversified, coming from miscellaneous sources.

**Old Material.**—Prices are higher on some grades of scrap, but this is accounted for by the fact that new supplies are not coming out fast enough to satisfy short sales. While consumers are showing some interest in low phosphorous grades and in cast and malleable iron scrap, market activity is largely confined to the dealers. Consumption, in fact, is showing a material decline. Open-hearth operations of the steel mills are being curtailed and bar iron mills are either idle or running at a very low rate. Demand for iron mill grades is so light that prices are little more than nominal except on materials which can be diverted to other uses. There is practically no market for No. 2 busheling. Railroad offerings include the Rock Island, 5000 tons; the Santa Fé, 2000 tons, and the Chesapeake & Ohio, 5700 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

| Per Gross Ton                        |                    |
|--------------------------------------|--------------------|
| Iron rails                           | \$19.50 to \$20.00 |
| Cast iron car wheels                 | 18.00 to 18.50     |
| Relaying rails, 56 and 60 lb.        | 26.00 to 27.00     |
| Relaying rails, 65 lb. and heavier   | 32.00 to 35.00     |
| Forged steel car wheels              | 17.50 to 18.00     |
| Railroad tires, charging box size    | 17.50 to 18.00     |
| Railroad leaf springs, cut apart     | 18.00 to 18.50     |
| Rails for rerolling                  | 15.50 to 16.00     |
| Steel rails, less than 3 ft.         | 16.50 to 17.00     |
| Heavy melting steel                  | 14.00 to 14.50     |
| Frogs, switches and guards cut apart | 14.00 to 14.50     |
| Shoveling steel                      | 13.50 to 14.00     |
| Drop forge flashings                 | 9.50 to 10.00      |
| Hydraulic compressed sheets          | 11.00 to 11.50     |
| Axle turnings                        | 11.00 to 11.50     |
| Steel angle bars                     | 16.00 to 16.50     |
| Per Net Ton                          |                    |
| Iron angle and splice bars           | 17.50 to 18.00     |
| Iron arch bars and transoms          | 17.50 to 18.00     |
| Iron car axles                       | 24.00 to 24.50     |
| Steel car axles                      | 15.50 to 16.00     |
| No. 1 busheling                      | 10.00 to 10.50     |
| No. 2 busheling                      | 7.00 to 7.50       |
| Cut forge                            | 12.50 to 13.00     |
| Pipes and flues                      | 8.00 to 8.50       |
| No. 1 railroad wrought               | 12.50 to 13.00     |
| No. 2 railroad wrought               | 12.50 to 13.00     |
| Steel knuckles and couplers          | 16.00 to 16.50     |
| Coil springs                         | 17.50 to 18.00     |
| No. 1 machinery cast                 | 18.50 to 19.00     |
| No. 1 railroad cast                  | 17.50 to 18.00     |
| No. 1 agricultural cast              | 17.50 to 18.00     |
| Low phos. punchings                  | 14.00 to 14.50     |
| Locomotive tires, smooth             | 15.50 to 16.00     |
| Machine shop turnings                | 6.00 to 6.50       |
| Cast borings                         | 9.00 to 9.50       |
| Short shoveling turnings             | 9.00 to 9.50       |
| Stove plates                         | 15.50 to 16.00     |
| Grate bars                           | 14.50 to 15.00     |
| Brake shoes                          | 16.00 to 16.50     |
| Railroad malleable                   | 17.00 to 17.50     |
| Agricultural malleable               | 16.50 to 17.00     |

## New York

### Heavy Buying of Pig Iron—Many Inquiries Pending—Large Tin Plate Purchases

NEW YORK, Nov. 20.—Buying of pig iron developed into a broad movement about the middle of last week and sales through New York offices for the past 10 days have amounted to about 100,000 tons, while about 25,000 tons is still pending. The principal transaction was the purchase of 50,000 tons by the American Radiator Co., which was closed today. Most of the buying last week was for rather small tonnages, the largest being 2500 tons, but the total amounted to about 35,000 tons. It is evident that important consumers are convinced that the market has struck bottom and among those represented this week are the following, the tonnages either having been placed or about to be: American Locomotive Co., 8000 to 9000 tons; Gould Coupler Co., 2000 tons; Eastern Malleable Iron Co., 5000 tons; American Brake Shoe & Foundry Co., 3500 tons; Worthing Pump & Machinery Corporation, 3500 tons; Miles-Bement-Pond Co., 300 tons; Ingersoll-Rand Co., 1000 tons; William H. Crane Co., 1000 tons; General Electric Co., 1800 tons. Buying is for the remainder of this year and the first quarter of next, and neither buyers nor sellers have been disposed to go beyond April. The buying has been done in most cases at low prices, with \$19 as the minimum at Buffalo, and \$21 as the minimum in eastern Pennsylvania. Following the buying sellers have advanced quotations and one company in eastern Pennsylvania is now asking \$23, while \$20 with 50c. differentials is more general in Buffalo, and it is doubtful whether iron could be purchased at less than \$20. Some sellers are predicting that \$21 will be the prevailing Buffalo price in a few days. While the buying has been widespread, it has been done carefully and some shrewd buyers are not yet included in the list of those who have placed orders. Whether the new prices now being asked can be maintained remains to be determined. Certain it is that the market is in a much better condition from the standpoint of furnaces than it has been for a number of months.

We quote delivered in the New York district as follows, having added to furnace price \$2.27 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.44 from Virginia:

|  |                    |
|--|--------------------|
| East. Pa. No. 1X fdy., sil. 2.75 to 3.25 ..... | \$23.77 to \$24.77 |
| East. Pa. No. 2X fdy., sil. 2.25 to 2.75 ..... | 23.27 to 24.27     |
| East. Pa. No. 2, sil. 1.75 to 2.25 .....       | 23.27 to 24.27     |
| Buffalo, sil. 1.75 to 2.25 .....               | 23.91 to 24.91     |
| No. 2X Virginia, sil. 2.25 to 2.75 .....       | 29.94              |
| No. 2 Virginia, sil. 1.75 to 2.25 .....        | 29.44              |

**Ferrolloys.**—There are substantial inquiries for ferromanganese from several consumers aggregating probably 1000 tons for delivery as soon as possible this year. There have been sales of carload lots of British alloy at \$110, seaboard, and there are reports that the domestic alloy is available at a concession from this price, or as low as \$107.50. There are predictions that, if the pig iron market becomes active and advances, the ferromanganese market will also become stronger and higher. Buying of spiegeleisen is confined to carload lots at prevailing quotations and the market is quiet. There have been no developments in the ferrosilicon or ferrochromium markets, purchases being of a hand-to-mouth nature at prevailing quotations.

**Cast-Iron Pipe.**—Makers report slightly better business than is usual at this season and generally expect to operate with a good tonnage ahead until spring demand begins. Inquiries and purchases by large gas and water companies are features of the present market. To purchasers willing to accept delivery through the winter months, concessions of from \$1 to \$1.50 are still offered. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, \$62.10 to

\$63.60; 4-in. and 5-in., \$67.10 to \$68.60; 3-in., \$77.10 to \$78.60, with \$5 additional for Class A and gas pipe. The upward trend of the soil pipe market is acting as a spur to business that might otherwise have been slow to develop. The gradual stiffening in prices has resulted in a disappearance of the 50% per cent off list for heavy pipe and recent buying has in most cases filled makers up for the next 40 to 60 days. We quote discounts of both Southern and Northern makers, f.o.b. New York, in carload lots, as follows: 6-in., 30% and 35% per cent off list; heavy, 40% and 45% per cent off list.

**Warehouse Business.**—While a fairly large volume of orders is generally reported, they are small in tonnage, as a rule, and the total is light. Weakness continues in sheet prices, and there are recurrent rumors of shading on bars. There is evidently a conviction on the part of buyers from mills that considerably better than current quotations could be obtained on any sizable order. A spread of 25c. per 100 lb. still obtains on cold-rolled shafting, some warehouses in New Jersey having refused to follow the recent increase. Except for weak spots on some products the market continues unchanged. We quote prices on page 1436.

**Finished Iron and Steel.**—Since the announcement by the American Sheet & Tin Plate Co. of its price of \$5.50 per base box for tin plate for the first half of 1924, contracts have been coming in freely to both this interest and independents. The American Can Co. has placed 5,400,000 base boxes with the leading interest and additional orders placed with two or three independent mills bring the total close to 6,000,000 boxes. Other users of tin plate have made reservations or have signed contracts, so that the tin plate mills are now assured of full rollings for the first half. The outlook for pipe is also encouraging, particularly for merchant pipe, demand for which has been stimulated by continued activity in building construction. The depressed situation in the oil industry precludes estimates of the demand for oil country pipe for first quarter or first half. In plates, shapes and bars there is no improvement, and although the demand for steel for buildings continues fairly good, especially in the New York territory, it is not sufficient to give the mills full rollings. Plates are so dull that there seems no hope of a revival this year. Orders are badly needed by makers of cold finished steel. In structural steel the largest new inquiries cover five new school buildings for New York, totaling 6000 tons. The New York Telephone Co. building, requiring 18,000 tons, is being refigured and may be let soon. A new office building at Broadway and Fortieth Street, not yet out for steel figures, will require 7000 tons, while an office building in Newark, also in preliminary stages, will take 2000 tons. Aside from the inquiry of the Southern Pacific Railroad for 11,000 cars, railroad equipment business pending is not up to expectations. Prices of plates, shapes and bars are unchanged at 2.40c. to 2.50c. for the former two and 2.40c., Pittsburgh, for the bars. There is continued weakness of prices on sheets, cold finished steel and hot rolled bands.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.74c.; plates and structural shapes, 2.74c. to 2.84c.; bar iron, 2.74c.

**Coke.**—The market still exhibits a slight tendency toward weakness, and prices are substantially unchanged. Standard foundry coke ranges from \$5 to \$6.25 per ton and standard furnace from \$3.75 to \$4.25 per ton, with medium sulphur quoted at \$3.25 to \$3.50. By-product coke is quoted at \$10.91, Newark and Jersey City, N. J.

**Old Material.**—There is a considerably better tone to the market this week and slightly higher quotations are ruling on some grades. Heavy melting steel ranges from \$14.50 to \$15 per ton, eastern Pennsylvania, and specification pipe, borings and turnings, cast borings and machine shop turnings are all slightly firmer than for some time. Borings and turnings are being purchased at \$11 to \$11.50, delivered to eastern Pennsylvania consumers, and turnings are firmer at \$11.50 per ton delivered. Cast borings are now quotable at \$12



per ton, delivered eastern Pennsylvania, and pipe is generally quoted at \$14.50 per ton, delivered. Stove plate is firm, \$15.50 per ton being reported paid for delivery to an eastern Pennsylvania consumer, and \$15.50 to \$16, delivered to New Jersey foundries. Not only is the domestic market showing signs of recovery, but a fair volume of export inquiry is reported. In most cases, however, offers are too low to permit of business.

Buying prices per gross ton New York follow:

|  |                    |
|--|--------------------|
| Heavy melting steel, yard.....                               | \$11.00 to \$11.50 |
| Steel rails, short lengths, or equivalent .....              | 11.50 to 12.00     |
| Rails for rolling.....                                       | 15.00 to 16.00     |
| Relaying rails, nominal.....                                 | 25.00 to 26.00     |
| Steel car axles.....   | 15.00 to 16.00     |
| Iron car axles.....  | 22.50 to 23.00     |
| No. 1 railroad wrought.....                                  | 13.00 to 13.50     |
| Wrought iron track.....                                      | 11.50 to 12.00     |
| Forge fire .....   | 8.00 to 8.50       |
| No. 1 yard wrought, long.....                                | 12.00 to 12.50     |
| Cast borings (clean).....                                    | 8.00 to 8.50       |
| Machine-shop turnings .....                                  | 7.50 to 8.00       |
| Mixed borings and turnings.....                              | 7.00 to 7.50       |
| Iron and steel pipe (1 in. diam., not under 2 ft. long)..... | 10.00 to 10.50     |
| Stove plate .....  | 12.50 to 13.00     |
| Locomotive grate bars.....                                   | 12.00 to 12.50     |
| Malleable cast (railroad).....                               | 14.00 to 15.00     |
| Cast-iron car wheels.....                                    | 15.00 to 15.50     |

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

|  |         |
|--|---------|
| No. 1 machinery cast.....  | \$19.00 |
| No. 1 heavy cast (columns, building materials, etc.), cupola size..... | 18.00   |
| No. 1 heavy cast, not cupola size.....                                 | 14.50   |
| No. 2 cast (radiators, cast boilers, etc.)...                          | 16.00   |

## Birmingham

### More Activity in Pig Iron—Sales Under \$19 Are Reported

BIRMINGHAM, ALA., Nov. 20.—About 200,000 tons of pig iron has been sold by Southern furnace interests here the last few days and the asking price advanced to \$21 for No. 2 foundry.

Soil pipe improvement also is reported at \$55, standard, with sales into first two months of next year. Pressure pipe companies are selling smaller sizes into second quarter of next year.

There is general improvement in the market. The Sloss-Sheffield Steel & Iron Co. will blow in its fourth furnace shortly.

A turn for the better is noted in the Southern iron market. Sales have been made of large tonnages for delivery in first quarter at \$20 for No. 2 foundry and under, with one company withdrawing for less than \$21 for next year delivery. The competition in the Middle West is keener as quotations are lowered by Northern furnaces. The quotations in Birmingham are weak, with \$20 given as average price for No. 2 foundry. Reports have it that differentials and freight rates make it possible for some Alabama iron to be sold under \$19 per ton. Local melters are still buying in small lots, to meet immediate needs. There is a little more iron being shipped and melted in the immediate territory than is being manufactured and more iron is being taken from the yards. The surplus stock of iron will show a little reduction if the make during the rest of the month does not exceed the melt and shipments. The local iron melters are doing well, everything considered, with prospects of improvement with the soil pipe makers. The pressure pipe people are assured of active operation through the winter, lettings being noted every week and specifications in sight from various directions. The Alabama Co. will blow out one of its two Gadsden furnaces for repairs.

We quote per gross ton f.o.b. Birmingham district furnace as follows:

|                                    |                    |
|------------------------------------|--------------------|
| Foundry, silicon 1.75 to 2.25..... | \$19.00 to \$20.00 |
| Basic .....                        | 20.00 to 21.00     |
| Charcoal, warm blast.....          | 33.00              |

**Finished Material.**—The steady shipment of steel bars, wire, nails, rods, etc., is still on. No little export business on wire and nails has come into the Birmingham district, and there are prospects of a continuation of this business for some time. The plants of the Tennessee Coal, Iron & Railroad Co., the Gulf States Steel Co. and the American Steel & Wire Co. have been producing steadily, the Gulf States having four open-hearth furnaces in operation and its entire finishing mills. Steel bars are quoted 2.60c.

**Coke.**—The coke market in the Birmingham district is far from being active. The production has been curtailed by blowing out of some beehive ovens and the repairing of by-product ovens. Coke quotations are weak, ranging from \$5.50 to \$7 for by-product foundry coke. Woodward and one or two others are making repairs to a few ovens. The surplus stock of coke in this district is not very extensive.

**Old Material.**—There is very little market for scrap iron and steel, not much of the old material moving. The quotations are still uncertain, weak and sagging. Heavy melting steel has but little demand and the borings and turnings command more attention. Dealers are still sticking to a policy of maintaining large stocks of old material and are meeting any and all demand.

We quote per gross ton f.o.b. Birmingham district yards, nominal prices, as follows:

|                                  |                    |
|----------------------------------|--------------------|
| Cast iron borings, chemical..... | \$18.00 to \$19.00 |
| Heavy melting steel.....         | 14.00 to 15.00     |
| Railroad wrought .....           | 15.00 to 16.00     |
| Steel axles .....                | 19.00 to 20.00     |
| Iron axles .....                 | 23.00 to 24.00     |
| Old steel rails.....             | 16.00 to 17.00     |
| No. 1 cast.....                  | 19.00 to 20.00     |
| Tram car wheels.....             | 18.00 to 19.00     |
| Car wheels .....                 | 17.00 to 18.00     |
| Stove plate .....                | 16.00 to 17.00     |
| Machine shop turnings.....       | 8.00 to 9.00       |
| Cast iron borings.....           | 9.00 to 10.00      |

## Buffalo

### Pig Iron Sales in Few Days Amount to a Very Large Tonnage

BUFFALO, NOV. 20.—The American Radiator Co. has purchased 50,000 tons of foundry iron for Buffalo plants for delivery over the next four months. The deal was made today. The buying movement, which had its inception last week, continues, and while not including all producers, a number of sales have been made that go to make a large volume. One firm today announced its base price as \$21.50 after closing details of the Radiator company purchase. Sales made before the Radiator transaction probably amounted to 50,000 tons. Some tonnages were closed at \$19 to \$19.50 for silicon 1.75 to 2.25 and in most instances differentials were waived. The present asking price of most sellers for malleable and foundry iron, silicon 1.75 to 2.25, is \$20, and the 50c. differential is asked. Practically all sales are for first quarter delivery; prices have not yet been named for second quarter. The unusually large placement will likely serve to maintain the present basis of furnace operation which was threatened with curtailment through the winter.

We quote f.o.b., gross ton, Buffalo as follows:

|                                       |                    |
|---------------------------------------|--------------------|
| No. 1 foundry, sil. 2.75 to 3.25..... | \$20.00 to \$20.50 |
| No. 2 foundry, sil. 2.25 to 2.75..... | 19.50 to 20.00     |
| No. 2 plain, sil. 1.75 to 2.25.....   | 19.50 to 20.00     |
| Basic .....                           | 20.50 to 21.00     |
| Malleable .....                       | 20.50 to 21.00     |
| Lake Superior charcoal.....           | 28.25              |

**Finished Iron and Steel.**—The general trend of new business is quiet and except for unusual activity in the placing of first half tin plate business other finished material is moving slowly. The usual order is for material for immediate use and every effort to keep down stock piles is made on account of the inventory factor. Some shading of prices on black sheets is being done and the price, 3.85c., quoted by a number of sellers, has been cut by one mill on a few desirable tonnages. One mill is quoting 2.40c. on shapes, while the mills usually represented in this territory are asking 2.50c. Prices on bands have weakened and 3c. is

the current quotation. Production of cold-finished material in the past few months has exceeded demand and sharp competition has brought out prices as low as 3c., Pittsburgh.

We quote warehouse prices Buffalo as follows: Structural shapes, 3.65c.; plates, 3.65c.; soft steel bars, 3.55c.; hoops, 4.65c.; bands, 4.35c.; blue annealed sheets, No. 10 gage, 4.45c.; galvanized steel sheets, No. 28 gage, 6.35c.; black sheets, No. 28 gage, 5.25c.; cold rolled round shafting, 4.70c.

**Old Material.**—Consumers are credited with giving consideration to prospective stocking up on heavy melting steel and a few other commodities. This feeling is engendered through the low prices and the stagnant condition of the market. Stronger prices elsewhere are not reflected here, but there are no transactions that would make a market. One mill has sent out feelers for heavy melting steel in lots of 1000 tons and the like, but is willing to pay only \$14.50 per ton, and dealers are not inclined to release first grade steel at this figure.

We quote f.o.b., gross ton, Buffalo, as follows:

|                                |                    |
|--------------------------------|--------------------|
| Heavy melting steel.....       | \$14.50 to \$15.50 |
| Low phos., 0.04 and under..... | 20.00 to 21.00     |
| No. 1 railroad wrought.....    | 14.00 to 15.00     |
| Car wheels.....                | 15.50 to 16.50     |
| Machine shop turnings.....     | 8.50 to 9.00       |
| Cast iron borings.....         | 11.50 to 12.00     |
| No. 1 busheling.....           | 12.50 to 13.00     |
| Stove plate.....               | 16.00 to 16.50     |
| Grate bars.....                | 15.50 to 16.00     |
| Bundled sheet stampings.....   | 8.00 to 9.00       |
| No. 1 machinery cast.....      | 18.00 to 19.00     |
| Hydraulic compressed.....      | 12.50 to 13.00     |
| Railroad malleable.....        | 17.00 to 18.00     |

## St. Louis

### Heaviest Buying in Several Years—Prices Are Still Low

ST. LOUIS, Nov. 20.—After months of almost continuous inactivity, the pig iron market burst forth this week with a flood of sales, the heaviest in several years. Sales to melters in the district aggregated about 30,000 tons of foundry iron about equally divided between Northern and Southern make. The Northern make was sold on a basis of \$22, Chicago, while the Southern product was sold at \$18.50 to \$19. The stove interests here and in Belleville were heavy purchasers, taking care of their requirements for first quarter. One stove castings concern in Belleville bought 2500 tons, the largest single purchase, and there were 15 or 20 orders for 1000 to 2000 tons. The St. Louis Coke & Iron Co. sold 5000 tons in lots of carloads to 150 tons. The sales noted were for first quarter delivery, but there were several private understandings that iron would not be shipped until second quarter. The heavy buying was due to a feeling that the market had about reached level. That this feeling was so deep rooted is due to the talk made here last week by J. W. McQueen, president of Sloss-Sheffield Steel & Iron Co., Birmingham, who told a gathering of foundrymen that the makers could not produce iron any cheaper than at present, and that their furnaces would close down rather than make a lower price than \$18.50. Besides that, there is a need for iron. One Southern maker sold a sufficient quantity during the week to withdraw from the market. There has been no upturn in prices in sympathy with the heavy buying. In fact, one St. Louis melter reports the purchase of 1200 tons of Northern iron in Chicago at \$21.50. The latter price, with freight added, would be on a par with Southern iron at \$18.50, Birmingham, freight added. The St. Louis Coke & Iron Co. reports the sale of 300 to 400 tons for prompt shipment.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$3.28 from Birmingham (rail and water), \$5.17 from Birmingham, all rail, and 81 cents average switching charge from Granite City:

|  |                  |
|--|------------------|
| Northern fdy., sil. 1.75 to 2.25.....      | \$23.66 to 24.16 |
| Northern malleable, sil. 1.75 to 2.25..... | 23.66 to 24.16   |
| Basic.....                                 | 23.66 to 24.16   |
| Southern fdy., sil. 1.75 to 2.25.....      | 23.67 to 24.17   |
| (rail).....                                | 23.67 to 24.17   |

**Finished Iron and Steel.**—The only order of consequence placed here in several weeks went to the Rail Joint Co. It was for 75,000 angle bars for 85 and 90-lb. rails for the Missouri Pacific Railroad, involving about

2500 tons. No other inquiries of consequence are pending. Neither manufacturers nor jobbers are in the market for any material, and likely will not be, except for a few fill-in items, until after the first of the year.

**Coke.**—The market for coke remains dull. There is very little demand for foundry grades, and the warm weather has cut off buying of domestic coke. Dealers are well stocked and consumers are not buying.

**Old Material.**—Prices of old material are unchanged. The market is showing some strength, but it is due entirely to the activities of dealers. Consumers are buying very little, but dealers are confident that prices will increase when buying is resumed and they are willing to buy material to lay down in their yards. Dealers are competing keenly for offerings by railroads. New lists during the week follow: Wabash Railroad, 2500 tons; M. K. T., 2000 tons; Rock Island, 5000 tons; Santa Fé, 2000 tons, and Pennsylvania, 500 tons, the latter old locomotives.

#### Per Gross Ton

|   |                    |
|---|--------------------|
| Iron rails.....                           | \$15.00 to \$15.50 |
| Rails for rolling.....                    | 14.00 to 14.50     |
| Steel rails, less than 3 ft.....          | 16.50 to 17.00     |
| Relaying rails, 60 lb. and under.....     | 25.00 to 26.00     |
| Relaying rails, 70. and over.....         | 32.50 to 33.50     |
| Cast iron car wheels.....                 | 17.00 to 17.50     |
| Heavy melting steel.....                  | 13.00 to 13.50     |
| Heavy shoveling steel.....                | 12.50 to 13.00     |
| Frogs, switches and guards cut apart..... | 13.50 to 14.00     |

#### Per Net Ton

|                                     |                |
|-------------------------------------|----------------|
| Heavy axles and tire turnings.....  | 11.00 to 11.50 |
| Steel angle bars.....               | 12.25 to 12.75 |
| Steel car axles.....                | 15.00 to 15.50 |
| Iron car axles.....                 | 22.50 to 23.00 |
| Wrought iron bars and transoms..... | 17.00 to 17.50 |
| No. 1 railroad wrought.....         | 12.50 to 13.00 |
| No. 2 railroad wrought.....         | 11.50 to 12.00 |
| Railroad springs.....               | 14.50 to 15.00 |
| Cast iron borings.....              | 9.00 to 9.50   |
| No. 1 busheling.....                | 12.25 to 12.75 |
| No. 1 railroad cast.....            | 17.00 to 17.50 |
| No. 1 machinery cast.....           | 17.00 to 17.50 |
| Railroad malleable.....             | 14.50 to 15.00 |
| Machine shop turnings.....          | 9.00 to 9.50   |
| Champion bundled sheets.....        | 7.00 to 7.50   |

## Boston

### Heavy Sales of Pig Iron Made in New England at Concessions

BOSTON, Nov. 20.—Sales of pig iron in New England were heavy the past week, aggregating 20,000 to 25,000 tons, for nearby and first quarter 1924 delivery. One Buffalo furnace took more than 10,000 tons. A textile machinery maker bought 1500 tons No. 2X and No. 1X, another an equal amount of No. 2X, and a stove maker 1000 tons No. 2X, all first quarter. Other sales involved 500 tons and less. A Massachusetts heater maker this week will close on 4000 tons or more No. 2 plain iron. No. 2X and No. 1X, Buffalo, in 100 ton lots and larger sold at \$20, furnace, or \$24.91 delivered, and at least one round tonnage of No. 2X at \$19.50, furnace. On the other hand, No. 1X, in car lots, sold as high as \$22, furnace, or \$26.91 delivered. Buffalo furnaces are now maintaining differentials, but are still on a \$20, furnace, base. New York State iron sold in a small way at prices slightly under the Buffalo furnace equivalent. No. 2X eastern Pennsylvania iron sold at \$21, furnace base, or \$25.15 delivered or with differentials, at \$22, furnace base, without differentials, while at least one furnace on the latter base sold at \$25.15 delivered. One eastern Pennsylvania furnace has advanced from \$22 to \$22.50 base with differentials. Only one Alabama furnace is quoting in this territory and has taken some business on a \$20, furnace, base. The Virginia iron market is purely nominal, prices quoted for it being far out of line with other irons.

We quote delivered prices on the basis of the latest reported sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$9.60 from Alabama:

|                                     |                    |
|-------------------------------------|--------------------|
| East. Penn., sil. 2.25 to 2.75..... | \$25.15 to \$26.14 |
| East. Penn., sil. 1.75 to 2.25..... | 24.65 to 25.65     |
| Buffalo, sil. 2.25 to 2.75.....     | 24.91 to 25.41     |
| Buffalo, sil. 1.75 to 2.25.....     | 24.51 to 24.91     |
| Virginia, sil. 2.25 to 2.75.....    | 30.92 to 32.42     |
| Virginia, sil. 1.75 to 2.25.....    | 30.92 to 31.92     |
| Alabama, sil. 2.25 to 2.75.....     | 30.10              |
| Alabama, sil. 1.75 to 2.25.....     | 29.60              |



**Structural Steel.**—A goodly number of small structural steel contracts are being closed by fabricators in this territory, jobs requiring less than 100 tons, but large tonnages are in limited supply. Bids are in on 250 tons for a State bridge at Wilbraham, Mass. Dec. 3 is the date on which bids will close for a Fall River, Mass., power house requiring 3000 tons and not 3500 tons, previously reported. Stone & Webster are the engineers. That company has awarded 200 tons light iron work for a Weymouth plant to Babcock-Davis Corporation, Boston. The market on structural steel is generally 2.40c., base Pittsburgh.

**Cast Iron Pipe.**—R. D. Wood & Co., Philadelphia, were the low bidders on 3000 tons of 6-in. to 16-in. pipe wanted by Boston for second quarter, 1924 delivery, bids for which were opened last week. Fall River, Mass., has awarded 600 to 700 tons of 6-in. to 16-in. pipe, 1924 requirements, to the Warren Foundry & Pipe Co. No other round tonnages are in the open market, but the aggregate of small tonnages required by municipalities and towns for next spring work is large. The market on small lots of pipe is well maintained, but on large lots is soft in spots, although concessions are comparatively small.

**Coke.**—Less activity is noted in the coke market. Connellsville foundry coke is offered in this territory at attractive prices, but New England foundries are well covered for the remainder of 1923, as well as first half of 1924. Specifications against 1923 contracts are less frequent, yet the aggregate volume of shipments by the New England Coal & Coke Co. and the Providence Gas Co. is larger than it was a year ago. Both companies are doing current business on a basis of \$12.50 a ton delivered in New England. The market for domestic coke is unsettled and this fact may have some influence on the December contract price for by-product foundry fuel.

**Old Material.**—Dealings in old material are even less active, but sentiment in the market is more optimistic because of improvement noted at other centers. Heavy melting steel is up 50c. at \$10 to \$10.50 on cars shipping point without expansion in transactions. On the other hand, dealers having filled orders for machine shop turnings at \$7 to \$7.50 on cars, the market has slipped back 50c., and forged scrap and bundled skeleton in chemical borings at unchanged prices are reported, and there are few inquiries for railroad wrought. A car here and there constitutes the cast iron scrap market. A New England brake shoe manufacturer having withdrawn from the market, stove plate is lower. Prices on and conditions governing other old materials remain unchanged.

The following prices are for gross ton lots delivered consuming points:

|                           |                    |
|---------------------------|--------------------|
| No. 1 machinery cast..... | \$22.00 to \$22.75 |
| No. 2 machinery cast..... | 20.00 to 20.50     |
| Stove plates .....        | 14.50 to 15.00     |
| Railroad malleable .....  | 19.00 to 20.00     |

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

|  |                    |
|--|--------------------|
| No. 1 heavy melting steel.....                       | \$10.00 to \$10.50 |
| No. 1 railroad wrought.....                          | 13.00 to 13.50     |
| No. 1 yard wrought.....                              | 11.00 to 11.50     |
| Wrought pipe (1-in. in diam., over 2 ft. long) ..... | 9.00 to 9.50       |
| Machine shop turnings .....                          | 6.50 to 7.00       |
| Cast iron borings, rolling mill..                    | 7.50 to 8.00       |
| Cast iron borings, chemical.....                     | 9.50 to 10.00      |
| Blast furnace borings and turnings                   | 6.75 to 7.25       |
| Forged scrap and bundled skeleton                    | 7.00 to 7.50       |
| Street car axles.....                                | 13.50 to 14.00     |
| Street car wheels .....                              | 11.50 to 12.50     |
| Rails for rerolling.....                             | 11.50 to 12.00     |

### Quotations on Belgian Rails

Recent efforts of New York importers to bring in European rails failed by several dollars to get quotations down to the present necessary level of \$44, duty paid, Atlantic port. The Belgian \$46 c.i.f. New York price mentioned in these columns last week was, considering duty and cost of rail haul, over \$3 higher than the corresponding American mill quotation, and it was for rails of about 60 lb. section and not for heavier open-hearth sections difficult to obtain in Europe.

## Cincinnati

### Pig Iron Buying Active in Both Northern and Southern Grades

CINCINNATI, Nov. 20.—About 30,000 tons of pig iron was sold in the Cincinnati territory last week, making the most active week in many months. Inquiries outstanding aggregate about 15,000 tons. The buying was confined almost entirely to foundry and malleable grades, there being little activity in basic, Bessemer or silveries. Most of the business in Northern iron was booked on a \$22, Ironton basis, though some sales were made at \$22.50. Buffalo iron was sold in the northern part of Ohio, eastern Indiana, and southern Michigan and it was reported that some of this iron also went to southern Ohio melters. There was also considerable activity in Southern irons. One agency reports sales aggregating 10,000 tons at \$19 to \$19.50 for rest of this year and first quarter, while another furnace booked a small tonnage for first quarter at \$19. Both of these furnaces have withdrawn for the time being. Nineteen dollars can still be done on this year's business, but most of the Southern furnaces are now quoting \$20 to \$21 on first quarter contracts. The present situation is undoubtedly firmer, but whether prices will advance depends, according to well posted buyers and sellers, on whether the buying movement will be sustained. The buying of the past week was fairly widespread, and the tonnages were not large, ranging from 1500 tons, the largest reported, down to carloads. The attitude of the buyer seems to be that prices are now attractive enough for him to come for part of his requirements, but apparently he is not placing all the tonnage he expects to melt in the first quarter.

Based on freight rates of \$4.05 from Birmingham and \$2.27 from Ironton we quote f.o.b. Cincinnati:

|   |         |
|---|---------|
| Southern coke, sil. 1.75 to 2.25 (base)....   | \$23.05 |
| Southern coke, sil. 2.25 to 2.75 (No. 2 soft) | 23.55   |
| Ohio silvery, 8 per cent.....                 | 34.77   |
| Southern Ohio coke, sil. 1.75 to 2.25 (No. 2) | 24.27   |
| Basic Northern .....                          | 24.27   |
| Malleable .....                               | 24.27   |

**Finished Materials.**—There has been little improvement in buying of finished materials, though the monthly requirements of railroads in this territory are heavier for November than was the case for October. Bids were taken by two important roads for plates and shapes during the past week, and it is reported that a cut of \$2 per ton had been made by at least two mills. On general business, however, the price of 2.50c on plates and shapes is being well maintained, and most of the orders are being booked on this basis. A slight improvement in the demand for bars is reported, and reports of 2.35c being quoted are hard to confirm, as sales were recorded during the week at 2.40c. A slight improvement in the demand for wire products is noted, but orders usually are for carload lots for immediate shipment. A lively movement in rail and track accessories, such as track bolts, spikes, switch stands and frogs and switches, developed last week, and some good-sized orders were booked. In light rails, however, the demand is limited. Forgings are in fair demand. Bolts and nuts are not in demand, and prices extremely weak. Steel pipe is strong and active.

**Sheets.**—Reports are current that 3.75c for black and 4.90c for galvanized sheets have been quoted for first quarter delivery, but these are not confirmed. Some orders have been placed at these prices for shipment early in January, it is reported, however, the idea being apparently to avoid having these tonnages show on this year's inventory. First quarter contracting is going along at a fair rate, but little activity is reported in prompt shipment materials. Tin plate is in good demand, and prices are firm at 5.50c per base box.

**Structural Material.**—There is little new business of consequence coming out, although a number of projects will likely be awarded this week. A number of buildings are in prospect, and will likely come out before the first of the year.

**Reinforcing Bars.**—An active demand for reinforce-

ing bars is noted. The Southern Railway took bids Nov. 20 on two office buildings, one at Birmingham and one at Charlotte, which will require about 1500 tons of bars. Other projects up include a large total tonnage. It is expected that the bars for the Tanners' Research Laboratory, University of Cincinnati, will be awarded this week. A northern Ohio mill is understood to be low bidder. Road work in Kentucky and Ohio let during the past week calls for approximately 600 tons of bars, which will likely be awarded this week. Prices show no change, the range being from 2.20c for rerolled bars to 2.40c for bars rolled from new billets.

**Semi-finished Materials.**—Some small sales of sheet bars were reported at the \$42.50 price, and mills in the district report that this is as low as the market has gone. The range on billets runs from \$40 to \$42.50.

**Warehouse Materials.**—Business generally is rather light, and small lots for immediate delivery form about the only activity. There has been some demand for blue annealed sheets during the week, however, and a number of fair-sized orders were booked. Reinforcing bars were in fair demand, as were small angles. Wire products are inactive. Prices are unchanged from previous weeks, and in this connection it is noted that with the exception of sheets, no changes have been made in warehouse quotations in Cincinnati since April 6.

Cincinnati jobbers quote: Iron and steel bars, 3.50c.; reinforcing bars, 3.60c.; hoops, 4.55c.; bands, 4.25c.; shapes, 3.60c.; plates, 3.60c.; cold-rolled rounds, 4.50c.; cold rolled flats, squares and hexagons, 5c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, 4.80c.; No. 28 galvanized sheets, 5.85c.; No. 9 annealed wire, \$3.60 per 100 lb.; common wire nails, \$3.60 per keg base; cement coated nails, \$3.30 per keg.

**Coke.**—There is little activity in coke, though more orders were placed compared with the previous week. Production of beehive and by-product fuel is being considerably curtailed in nearby fields. Prices generally are as last quoted as follows:

Connellsville furnace, \$3.75; foundry, \$5; New River foundry, \$10 to \$11; Wise County furnace, \$5.25; Foundry, \$5.75; by-product Foundry, \$9, Connellsville basis.

**Old Material.**—Dealers are again apparently making the market, as in this district the consumer is not buying in any quantities. Prices on some grades are up a little, however, for shipment to other districts. Heavy melting steel and railroad cast are 15c. higher, while borings and turnings are up \$1. Other grades remain as last quoted.

We quote dealers' buying prices, f.o.b. cars Cincinnati:

|                                  | Per Gross Ton     |  |
|----------------------------------|-------------------|--|
| Bundled sheets                   | \$9.50 to \$10.00 |  |
| Iron rails                       | 13.00 to 13.50    |  |
| Relaying rails, 50 lb. and up    | 27.00 to 27.50    |  |
| Rails for rolling                | 13.00 to 13.50    |  |
| Heavy melting steel              | 12.15 to 12.65    |  |
| Steel rails for melting          | 12.50 to 13.00    |  |
| Car wheels                       | 12.50 to 13.00    |  |
|                                  | Per Net Ton       |  |
| No. 1 railroad wrought           | 11.00 to 11.50    |  |
| Cast borings                     | 8.50 to 9.00      |  |
| Steel turnings                   | 8.00 to 8.50      |  |
| Railroad cast                    | 12.65 to 14.15    |  |
| No. 1 machinery cast             | 16.50 to 17.00    |  |
| Burnt scrap                      | 10.50 to 11.00    |  |
| Iron axles                       | 20.50 to 21.00    |  |
| Locomotive tires (smooth inside) | 12.50 to 13.00    |  |
| Pipes and flues                  | 6.50 to 8.00      |  |

### Detroit Scrap Market

DETROIT, Nov. 20.—The market on old material is very inactive and apparently waiting for mills and furnaces to anticipate their needs for the first quarter of next year, as dealers are showing little interest in piling waste material. Melters generally are showing more interest in the pig iron market and considerable buying developed in the last few days of the past week, which may react on the scrap market.

The following prices are quoted on a gross ton basis f.o.b. cars producers' yards, excepting stove plate, automobile cast and No. 1 machinery cast, which are quoted on a net ton basis:

|                       |                    |
|-----------------------|--------------------|
| Heavy melting steel   | \$11.50 to \$12.50 |
| Shoveling steel       | 11.50 to 12.50     |
| No. 1 machinery cast  | 16.00 to 17.00     |
| Cast borings          | 8.50 to 9.35       |
| Automobile cast scrap | 22.00 to 23.00     |
| Stove plate           | 15.00 to 16.00     |
| Hydraulic compressed  | 9.50 to 10.50      |
| Short turnings        | 8.75 to 9.25       |
| Long turnings         | 7.00 to 7.85       |
| Flashings             | 8.25 to 9.35       |

## Cleveland

### Heavy Buying Movement in Pig Iron—Prices Recede \$1—Large Tonnage Pending

CLEVELAND, Nov. 20.—A heavy buying movement has developed in the pig iron market under the influence of further price concessions and there are indications that the bottom of the market has been reached. In fact, some producers are refusing to meet the minimum quotations now appearing and are talking of a slight price advance. The buying did not get under full sway until late in the week and during the past day or two a large volume of inquiries has come out. One seller has widely scattered inquiries for 100,000 tons and another for 40,000 tons. Inquiries are largely for December-March or first quarter shipment but some are for the first half. They are coming from automobile foundries and about all other classes of consumers except the agricultural implement manufacturers, although a 1500-ton inquiry has come from an implement maker. Both large and small consumers are in the market and among the numerous inquiries are six or more for 3000 tons each and one for 15,000 tons, the latter being for both foundry and malleable iron. Most producers are declining to quote for delivery beyond the first quarter. Local prices have declined \$1 a ton or to \$22 at furnace for Cleveland delivery and to \$21 to \$21.50 for outside shipment. However, a 1000-ton lot of foundry iron for outside delivery has been taken by a Cleveland furnace at \$20.90. In the Valley district, prices on foundry and malleable grades range from \$20 to \$21. Buffalo iron is being offered to consumers in this territory at \$19.50, or equivalent to \$22.15 delivered in Cleveland, but local producers declare that they will not meet this price. In Michigan \$22 appears to be the minimum quotation and in Detroit sales are being made at \$22.50, furnace, for local delivery. Considerable business has been booked in the northern Ohio territory, including 2000 tons of malleable iron purchased by a Cleveland consumer and 1000 tons of foundry iron and 1000 tons of malleable iron taken by Warren, Ohio, consumers. Several small lot sales of low phosphorus iron are reported at \$29 to \$30. The market on this grade is weak. We note the sale of two lots of Southern foundry iron, one of 800 tons and the other of 400 tons to northern Ohio consumers at \$19.50 for the first quarter. The range on Southern iron is from \$19 to \$20 although one producer has advanced to \$21.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6 rate from Birmingham:

|  |                |
|--|----------------|
| Basic, Valley furnace                  | \$22.00        |
| Northern No. 2 fdy., sil. 1.75 to 2.25 | 22.50          |
| Southern fdy., sil. 1.75 to 2.25       | 25.00 to 25.50 |
| Malleable                              | 22.50          |
| Ohio silvery, 8 per cent.              | 35.52          |
| Standard low phos., Valley furnace     | 29.00 to 30.00 |

**Iron Ore.**—Iron ore shipments are being rapidly cleaned up and boats are going out of commission as they reach lower lake ports with cargoes. Very little ore will be shipped after this week. Consumption of Lake Superior ore in October amounted to 4,800,571 gross tons, showing little reduction from September, when 4,813,942 tons were consumed. In October, 1922, the consumption was 4,012,007 tons. Interior furnaces in the Central district consumed 2,405,806 tons last month as compared with 2,459,880 tons in September, a decrease of 54,074 tons. Lake front furnaces including Canadian furnaces showed a gain, consuming 2,038,893 tons in October as compared with 1,994,703 tons in September. Eastern furnaces consumed 223,381 tons or a decline of 5341 for the month. On Nov. 1 there was 41,042,399 tons of ore at furnaces and Lake Erie docks as compared with 44,181,124 tons on the same date a year ago. Stocks at furnaces Nov. 1 were 32,944,911 tons as compared with 30,430,328 tons on Oct. 1.

**Semi-Finished Steel.**—There is no new demand for sheet bars, rerolling billets and slabs, but a leading local producer still has sufficient orders to keep its



plant operating at full capacity. Forging billets are moving in small lots. Sheet bars continue firm at \$42.50.

**Finished Iron and Steel.**—Mills are getting a fair volume of small orders, but consumers are buying only for immediate requirements and show a tendency to keep their stocks as low as possible at inventory time. However, orders booked by some mills this month show considerable gain over the corresponding period of October. Prices are firm at 2.40c. on steel bars and 2.50c. for structural material. Some irregularity is still in evidence in plates on which 2.40c. quotations are being made by some Ohio mills, but usually for shipment to points where they must meet the competition of Chicago mills. An Ohio tank shop has placed 250 tons for tank work with a Youngstown mill and quotations have been made on several lots for pending locomotive work. No inquiries developed during the week for round lots of steel for specific work. In the building field inquiry has become very light and contractors are delaying the placing of several thousand tons of steel for work for which bids have recently been taken. Hot-rolled steel is moving slowly and prices are not firm. Bands and heavy hoops are quoted at 3c. and wide strip as low as 2.75c. Cold finished steel bars are weak and the regular 3c. price is being shaded on desirable orders.

Jobbers quote steel bars, 3.36c.; plates and structural shapes, 3.46c.; No. 28 black sheets, 4.40c. to 4.65c.; No. 28 galvanized sheets, 5.60c. to 5.80c.; No. 10 blue annealed sheets, 3.60c. to 4.06c.; cold rolled rounds, 3.90c.; flats, squares and hexagons, 4.40c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 4.16c.; narrower than 1 in. or lighter than No. 20 gage, 4.66c.; No. 9 annealed wire, \$3.50 per 100 lb.; No. 9 galvanized wire, \$3.95 per 100 lb.; common wire nails, \$3.60 base per 100 lb.

**Bolts, Nuts and Rivets.**—Consumers and jobbers are curtailing their stocks of bolts and nuts with the approach of inventory time and new orders and specifications are very light. Price irregularities continue. The demand for rivets is slow and prices are weak with 2.65c. to 2.70c. quoted by some makers for large lots.

**Coke.**—Prices on foundry coke are unchanged at \$5 to \$6.50 for standard Connellsville makes. The demand is slow.

**Old Material.**—Prices have further advanced about 25c. a ton on most grades and the market is somewhat more active. A West Virginia steel company during the week purchased a round tonnage of scrap, paying \$16 for heavy melting steel, \$13.50 for turnings and \$14.50 for compressed steel. Local mills are not buying scrap nor is there any demand from Youngstown consumers. Sales of heavy melting steel are reported to dealers at \$16.25 to \$16.50 for Warren delivery but the Youngstown prices range from \$15.75 to \$16.

We quote dealers' prices f.o.b. Cleveland per gross ton:

|                                       |                    |
|---------------------------------------|--------------------|
| Heavy melting steel.....              | \$14.75 to \$15.00 |
| Rails for rolling.....                | 16.50 to 17.00     |
| Rails under 3 ft.....                 | 16.25 to 16.75     |
| Low phosphorus melting.....           | 17.00 to 17.50     |
| Cast borings.....                     | 10.75 to 11.00     |
| Machine shop turnings.....            | 10.25 to 10.50     |
| Mixed borings and short turnings..... | 10.50 to 10.75     |
| Compressed sheet steel.....           | 12.25 to 12.75     |
| Railroad wrought.....                 | 12.50 to 13.00     |
| Railroad malleable.....               | 19.00 to 19.25     |
| Light bundled sheet stampings.....    | 9.00 to 9.25       |
| Steel axle turnings.....              | 11.00 to 11.50     |
| No. 1 cast.....                       | 20.00 to 21.00     |
| No. 1 busheling.....                  | 9.50 to 10.25      |
| Drop forge flashings.....             | 9.75 to 10.00      |
| Railroad grate bars.....              | 15.75 to 16.00     |
| Stove plate.....                      | 15.75 to 16.00     |
| Pipes and flues.....                  | 9.50 to 10.00      |

**Sheets.**—The demand shows a slight improvement and some of the independent mills seem less inclined to shade regular quotations than a few weeks ago. However, black sheets are still freely offered at 3.75c. Mill stocks that have been offered at price concessions have become less a factor in the market, although galvanized sheets on stock lists are offered at 4.85c. While blue annealed sheets are fairly firm, a 2.90c. quotation has appeared on these. There is little activity in automobile body sheets. Buyers have not yet sent out first quarter inquiries.

**Reinforcing Bars.**—The demand has fallen off and keen competition is bringing out low prices. On soft steel bars a 2.30c. price has been quoted by a jobber

who evidently is anxious to reduce a stock purchased at lower than present mill prices. On rail steel bars 2.15c., delivered Cleveland, has been quoted, but the usual range is 2.10c. to 2.25c. Plans for the West Twenty-fifth Street bridge, Cleveland, have been revised and the amount of reinforcing bars required has been increased to 550 tons.

## San Francisco

### Dullness Is Pronounced, but Business More Active in Los Angeles

SAN FRANCISCO, Nov. 20.—The local market for steel and iron products is experiencing a somewhat prolonged period of quiet, in fact, the inactivity is more marked than for a long time past. While there is comparatively little change in conditions during the last two weeks, it is probably safe to say the dullness is slightly intensified. On the other hand there are some importers and dealers, more optimistic than others, who content themselves by saying that the market maintains a waiting attitude with a very moderate trade movement and a tendency toward a lower standard of values. Judging by present indications, however, the closing quarter of the year will have an exceptionally small business volume, probably the smallest for any similar period in several years past. Advices from Los Angeles say the outlook for new business there is more favorable now than at any time during the present year. Both mills and foundries are reported busy with orders and some of them are working overtime.

**Pig Iron.**—Some surprise is being expressed that consumers have been able to keep themselves going without buying additional material for a long time. It was generally known that supplies accumulated during the liberal buying of the early part of the year would last for three months or so, but it was confidently expected that buying orders for material would be booked early in the last quarter. As a matter of fact, there is very little outside of the small hand to mouth purchasing thus far with one-half of the last quarter already gone. Importers are showing some hesitancy in giving out prices and there is more than the usual variation. While some quote \$34 and possibly \$35 per ton, there are others who say \$33 is a full figure. This refers, of course, to strictly first class material and must not be construed to apply to several small lots recently sold in this market which would not grade up to standard analysis. As far as can be learned, there are only two small lots of foreign iron on the way and both are already sold. All importers and traders agree that business in the southern part of the State is active and several sales have been effected in Los Angeles at slightly better prices than could have been obtained in this city.

**Coke.**—There have been no developments in the market and importers say that outside of the usual requirements for the railroads there is practically no inquiry. Prices are not being quoted but only a few small lots are available and, if wanted, buyers would doubtless have to pay the same figures as a month ago, around \$21 for foreign and proportionately higher for domestic. Foreign tonnage afloat is slightly greater than two weeks ago, but the increase is said to be destined to the southern part of the State. There was an inquiry from Seattle but no business resulted.

**Finished Iron and Steel.**—Business is described as fair and there is no delay in getting orders promptly filled. Prices remain about the same as for the past month, although there is some disposition to shade the asking rates. Bars are now quoted at 3.70c. to 3.75c. and structural steel at 3.85c. in carload lots with a slightly increased demand for bars during the past ten days. The trade looks for a very moderate business from now to the end of the year.

**Old Material.**—With slackened work in both mills and foundries, the demand for all grades of scrap is necessarily limited. Prices are a little lower and the downward trend is unmistakable. At present \$13.50 to

\$14.50 is the quotable range, but several recent sales at fractionally lower figures are reported. Reports from Los Angeles say business there is active and prices are from 50c. to \$1 per ton lower than in this part of the State.

## Philadelphia

### Eastern Melters Buy Pig Iron Freely—Asking Prices Are Advanced

PHILADELPHIA, Nov. 20.—A buying movement in pig iron of considerable proportions developed early last week, and up to today Eastern consumers had placed orders for 80,000 to 100,000 tons of iron with furnaces in this district for delivery over the next four months. The demand for iron developed almost over night, although it was not unexpected, as iron prices had reached a point so low as to encourage far-sighted consumers to cover for first quarter. Most of the business was on the basis of \$21, f.o.b. eastern Pennsylvania furnace, but the principal producers are now comfortably situated and there has been a stiffening of prices, \$22, furnace, being named by some interests and \$23 by others. At least two producers have practically withdrawn from the market for the present. The recovery in pig iron has been accompanied by a slight betterment in scrap, although in the latter there has been no important buying except one lot of 10,000 tons of heavy melting steel by a plate mill.

The steel market, while still exceedingly dull, has felt the influence of improved sentiment. There is, for one thing, a better volume of inquiry, mostly for small lots. Some of the larger consumers who have not been specifying freely on their fourth quarter contracts have indicated that they will specify in full before the end of the year, but they do not wish to carry any more stock than is necessary over the inventory period.

Tin plate contracts have been signed up freely, fully 50 per cent of the tin plate normally required by consumers in this territory for first half already being on the books, while the remainder will be closed shortly.

The distribution of 200,000 tons of rails by the Pennsylvania Railroad has finally been effected, the Steel Corporation getting 94,000 tons, the Bethlehem Steel Corporation the same quantity, and the Inland Steel Co. 12,000 tons.

**Pig Iron.**—The improvement in the pig iron market, noted in this column a week ago, developed into a large buying movement before the end of last week. Sales of all grades by eastern Pennsylvania furnaces easily totaled 80,000 tons, while some estimates place the total at 100,000 tons. This, of course, included sales to consumers in New England and New York territories, many of the largest foundry iron consumers covering their full requirements for December and first quarter. One producer sold 30,000 tons in a week, two others booked 20,000 tons each, and a fourth took 10,000 tons, while smaller bookings were made by other interests. On most of this tonnage, prices averaged \$21, furnace, for No. 2 plain, but in one instance business was closed at \$20.75 for No. 2 plain and at \$21 for No. 2X. One of the principal sellers is now well filled up for December and first quarter, is quoting \$23, base, and is considering only carload lots from regular customers. Three other interests are quoting \$22, base, at furnace, but it is not yet certain that this price will be strictly observed on large tonnage. It is certain, however, that there will be less competition for business at the low levels of last week, and already there have been a few sales of carload lots on the \$23 base. Sales of the past week included two lots of basic totaling 5000 tons, which went at about \$21.50 furnace. There are large stocks of iron at eastern Pennsylvania furnaces, but much of this is off grade, due to the fact that the furnaces recently have been buying coke in the spot market, and this spot coke has resulted in the production of a good deal of high sulphur iron. The Virginia furnaces did not

share in last week's buying movement. One or two furnaces in that district are quoting \$25 to \$26, furnace, which, with high freight rates, puts them at a decided disadvantage. Four hundred and forty tons of iron from British India came in last week.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76 cents to \$1.63 per gross ton:

|   |                    |
|---|--------------------|
| East. Pa. No. 2 plain, 1.75 to 2.25             |                    |
| sil. ....                                       | \$22.64 to \$24.13 |
| East. Pa. No. 2X, 2.25 to 2.75 sil. ....        | 22.64 to 24.63     |
| East. Pa. No. 1X.....                           | 23.76 to 25.13     |
| Virginia No. 2 plain, 1.75 to 2.25              |                    |
| sil. ....                                       | 29.17 to 30.17     |
| Virginia No. 2X, 2.25 to 2.75 sil. ....         | 30.17 to 30.67     |
| Basic delivered eastern Pa. ....                | 22.75 to 23.00     |
| Gray forge .....                                | 23.00 to 24.00     |
| Malleable .....                                 | 23.00 to 24.00     |
| Standard low phos. (f.o.b. furnace) .....       | 28.00 to 30.00     |
| Copper bearing low phos. (f.o.b. furnace) ..... | 28.00              |

**Semi-finished Steel.**—With no sales of importance, billets remain unchanged in price, \$40, Pittsburgh, for open-hearth rerolling quality, and \$45 for forging quality.

**Plates.**—Eastern plate mills are still suffering severely from lack of orders. Operations are at a low rate. The price situation is unchanged, quotations ranging from 2.40c. to 2.50c., Pittsburgh, according to the mill and the character and size of the specification. The Chesapeake & Ohio railroad, which a few weeks ago inquired for 2000 steel freight cars, is now asking for prices on the steel, with the possibility that the steel may be furnished to a car shop. The inquiry calls for 14,000 tons of plates, 8000 tons of shapes and 860 tons of bars.

**Structural Shapes.**—New building projects in this district are few. Inquiries for steel for construction cover mostly small jobs, 100 tons or under. Prices are unchanged at 2.40c. to 2.50c., Pittsburgh.

**Iron Ore.**—Last week's importations of foreign iron ore were as follows: From French Africa, 14,950 tons; from Sweden, 5587 tons; from Germany, 550 tons.

**Old Material.**—On the dealers' side of the market, there is a considerable degree of strength, because of their firm belief that prices are due for a rise. The sale of 10,000 tons of heavy melting steel to an Eastern plate mill at \$15.50, delivered, with a rise of 50c. a ton on No. 1 railroad wrought and on heavy breakable cast for steel plants, are the outward evidences of a slight betterment. The lack of new tonnage in finished steel at Eastern mills is, of course, a factor which may work against any sharp rise in prices. One thousand tons of scrap from Cuba arrived at this port last week.

We quote for delivery at consuming points in this district as follows:

|  |                  |
|--|------------------|
| No. 1 heavy melting steel.....   | \$15.50          |
| Scrap rails .....  | 15.50            |
| Steel rails for rolling.....   | \$16.50 to 17.00 |
| No. 1 low phos., heavy 0.04 and under .....                            | 20.00 to 21.00   |
| Couplers and knuckles.....   | 17.50 to 18.00   |
| Cast-iron car wheels.....  | 17.50 to 18.50   |
| Rolled steel wheels .....  | 17.50 to 18.00   |
| No. 1 railroad wrought.....  | 17.50 to 18.00   |
| No. 1 yard wrought.....  | 15.50 to 16.00   |
| No. 1 forge fire.....  | 12.00 to 12.50   |
| Bundled sheets (for steel works) .....                                 | 12.00 to 12.50   |
| Mixed borings and turnings (for blast furnace use) .....               | 10.50 to 11.00   |
| Machine shop turnings (for steel works use) .....                      | 12.00 to 12.50   |
| Machine shop turnings (for rolling mill use).....                      | 12.50 to 13.00   |
| Heavy axle turnings (or equivalent) .....                              | 13.00 to 13.50   |
| Cast borings (for steel works and rolling mills).....                  | 12.00            |
| Cast borings (for chemical plants) .....                               | 15.00 to 16.00   |
| No. 1 cast.....  | 19.00 to 19.50   |
| Heavy breakable cast (for steel plants) .....                          | 16.50 to 17.00   |
| Railroad grate bars.....   | 16.00 to 16.50   |
| Stove plate (for steel plant use) .....                                | 16.00 to 16.50   |
| Railroad malleable .....   | 17.00 to 17.50   |
| Wrought iron and soft steel pipes and tubes (new specifications) ..... | 14.50 to 15.00   |
| Shafting .....   | 20.00 to 21.00   |
| Steel axles .....  | 18.50 to 19.50   |

**Bars.**—Inquiry for steel bars is light and mills are hungry for orders, but prices are fairly firm at 2.40c., Pittsburgh. On concrete reinforcing bars, some lower quotations are appearing, but are generally attributed to rerolling mills. Bar iron also is dull, with prices unchanged at 2.35c., Pittsburgh.



**Warehouse Business.**—Local steel jobbers continue to book a fair volume of business. Prices are unchanged and for local delivery are as follows:

Soft steel bars and small shapes, 3.47c.; iron bars (except bands), 3.47c.; round edge iron, 3.75c.; round edge steel, iron finished,  $1\frac{1}{2}$  x  $\frac{1}{2}$  in., 3.75c.; round edge steel planished, 4.55c.; tank steel plates,  $\frac{1}{4}$  in. and heavier, 3.57c.; tank steel plates,  $\frac{3}{8}$  in., 3.82c.; blue annealed steel sheets, No. 10 gage, 4.10c.; black sheets, No. 28 gage, 5.15c.; galvanized sheets, No. 28 gage, 6.25c.; square twisted and deformed steel bars, 3.57c.; structural shapes, 3.57c.; diamond pattern plates,  $\frac{1}{4}$ -in., 5.40c.;  $\frac{3}{8}$ -in., 5.60c.; spring steel, 5c.; round cold-rolled steel, 4.35c.; squares and hexagons, cold-rolled steel, 4.85c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.27c.; narrower than 1 in., all gages, 4.77c.; steel bands, No. 12 gage to  $\frac{3}{8}$ -in., inclusive, 4.27c.; rails, 3.47c.; tool steel, 8.50c.; Norway iron, 7c.

## British Iron and Steel Market

**Japanese Buying Fewer Black Sheets—Improvement in Steel Continues—Ruhr Negotiations**

### Broken Down

(By Cable)

LONDON, ENGLAND, Nov 20.

Pig iron continued firm, with good demand from both domestic and export markets. Additional furnaces are being restarted.

It is expected that the boilermakers' dispute will end soon. An agreement reached has been submitted to a ballot, with recommendation for acceptance. Hence it is anticipated that work will be resumed next week.

Hematite is strong with upward demand.

Steel is firm with improved demand from domestic and export markets. Many orders are expected to be released on resumption of work by the boilermakers.

Home Trade Association price control has been revived. English plates are fixed at £9 15s. (1.89c. per lb.); sections at £9 10s. (1.84c. per lb.); both delivered. Scotch plates and sections are fixed at those same prices, delivered in Clyde area only.

Continental markets are erratic, owing to fluctuation of exchange rates, but French prices generally are unaltered. India and Japan have bought fair quantities of merchant bars. Works are well sold out.

In France the Société Metallurgique de Senelle-Maubeuge has secured an Argentine order for 6000 tons of rails. De Wendel et Cie. have relighted the sixth furnace at Patural. The Société Lorraine des Acieries de Rombas has relighted a furnace previously blown out for repairs. Lorraine plants are complaining of a shortage of trucks.

In Germany negotiations between the French authorities and the Ruhr industrialists have broken down. The outlook is still gloomier.

Tin plate is still strong on continued demand. Option contracts for January-March are being sold on 23½s. (\$5.07) basis IC, f.o.b. A portion of the oil plate order has been placed, but no details are disclosed. Wasters are in keen request. Stocks of all kinds have diminished. Buyers of CW 20 x 14's are paying 21s. (\$4.56) f.o.b.

Galvanized sheets are steady, but demand is slow.

Japanese inquiry for black sheets has fallen off but the works are sold out until June. Prices, while firm, are unchanged.

We quote per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.34 per £1, as follows:

|                         |                     |                  |
|-------------------------|---------------------|------------------|
| Durham coke, delivered  | £1 17½s. to £1 18s. | \$8.14 to \$8.25 |
| Bilbao Rublo oref.....  | 1 4                 | 5.21             |
| Cleveland No. 1 foundry | 5 7½                | 23.33            |
| Cleveland No. 3 foundry | 5 0                 | 21.70            |
| Cleveland No. 4 foundry | 4 19                | 21.48            |
| Cleveland No. 4 forge.. | 4 17½ to 4 18       | 21.16 to 21.27   |
| Cleveland basic .....   | 4 12½ to 4 15       | 20.07 to 20.62   |
| East Coast mixed.....   | 5 0 to 5 0½         | 21.70 to 21.81   |
| East Coast hematite...  | 4 19 to 5 0         | 21.48 to 21.70   |
| Ferromanganese .....    | 17 0                | 73.78            |
| Ferromanganese* .....   | 17 0                | 73.78            |

|   |       |          |                |
|---|-------|----------|----------------|
| Rails, 60 lb. and up...                     | 8 10  | to 9 10  | 36.89 to 41.23 |
| Billets .....                               | 7 15  | to 8 5   | 33.64 to 35.81 |
| Sheet and tin plate bars, Welsh .....       | 9 2¼  |          | 39.60          |
| Tin plates, base box...                     | 1 3¾  | to 1 3¾  | 5.07 to 5.13   |
|   |       |          | C. per Lb.     |
| Ship plates .....                           | 9 5   | to 9 15  | 1.79 to 1.89   |
| Boiler plates .....                         | 12 10 | to 13 0  | 2.42 to 2.52   |
| Tees .....                                  | 9 15  | to 10 0  | 1.89 to 1.94   |
| Channels .....                              | 9 0   | to 9 10  | 1.74 to 1.84   |
| Beams .....                                 | 8 15  | to 9 5   | 1.70 to 1.79   |
| Round bars, ¾ to 3 in.                      | 10 5  | to 10 15 | 1.99 to 2.08   |
| Galvanized sheets, 24 g.                    | 19 0  | to 19 5  | 3.68 to 3.73   |
| Black sheets, 24 gage..                     | 14 0  |          | 2.71           |
| Black sheets, Japanese specifications ..... | 15 5  |          | 2.95           |
| Steel hoops .....                           | 12 0  | & 12 10* | 2.33 & 2.42*   |
| Cold rolled steel strip, 20 gage .....      | 17 5  |          | 3.24           |
| Cotton ties, Indian specifications .....    | 15 0  |          | 2.91           |

\*Export price. †Ex-ship, Tees, nominal.

## Continental Prices, All F. O. B. Channel Ports

|                    | (Nominal)         |                    |
|--------------------|-------------------|--------------------|
| Foundry pig iron:  |                   |                    |
| Belgium .....      | £5 5s. to £5 10s. | \$22.79 to \$23.87 |
| France .....       | 5 5 to 5 10       | 22.79 to 23.87     |
| Luxemburg .....    | 5 5 to 5 10       | 22.79 to 23.87     |
| Billets (nominal): |                   |                    |
| Belgium .....      | 7 0               | 30.38              |
| France .....       | 7 0               | 30.38              |
| Merchant bars:     |                   | C. per Lb.         |
| Belgium .....      | 7 15              | 1.50               |
| Luxemburg .....    | 7 15              | 1.50               |
| France .....       | 7 15              | 1.50               |
| Joists (beams):    |                   |                    |
| Belgium .....      | 7 12½             | 1.48               |
| Luxemburg .....    | 7 12½             | 1.48               |
| France .....       | 7 12½             | 1.48               |
| Angles:            |                   |                    |
| Belgium .....      | 8 0 to 8 5        | 1.55 to 1.60       |
| ¼-in. plates:      |                   |                    |
| Belgium .....      | 8 7½              | 1.62               |
| Germany .....      | 8 7½              | 1.62               |
| ¾-in. plates:      |                   |                    |
| Luxemburg .....    | 8 7½              | 1.62               |
| Belgium .....      | 8 7½              | 1.62               |

## Pig Iron Prices in Canada Still Declining

TORONTO, ONT., Nov. 19.—The limited demand that now exists for pig iron in the Canadian market together with the softening process that features the market in the United States has been reflected in a further drop of \$1 per ton in Canadian prices effective both in Toronto and Montreal. The reduction which recently went into effect brings the prices of No. 1 (2.25 to 2.75 silicon) down to \$28.30; malleable, \$28.30; No. 2 (1.75 to 2.25 silicon), \$27.30, Toronto, while Montreal quotations are No. 1 and malleable, \$30.20, and No. 2, \$29.20, freight charges to the latter district making up the spread in price. Despite the fact that prices have been on the decline for some time past, the demand has not improved and melters are showing no interest in their requirements outside of small tonnages for immediate use. Two or three of the larger melters in the Montreal district and a few in Ontario have placed contracts for last quarter needs, but in the majority of cases melters are satisfied to buy on a hand to mouth basis, and it is expected that this will continue until after the turn of the year. The low price quoted in Buffalo has resulted in a few shipments of iron from that district into Ontario, but in most cases Canadian producers are meeting outside competition and are taking care of home consumers.

## Proposed Bounty for Ontario Ore

TORONTO, Nov. 19.—The Provincial Government of Ontario will introduce legislation during the coming session for the provision of a bounty for the development of Ontario's iron ore resources along the northern shore of Lake Superior. The legislation, it is understood, will be contingent upon a similar bounty from the Dominion Government. It is understood that the report of the special committee appointed by the late Ontario Government to investigate the iron ore situation in the province is now almost completed and that it will find that the development of the huge latent iron ore deposits of the province is entirely practicable, but that as the ores are of such character as to need beneficiation, operations will have to be conducted on a large scale which will necessitate a bounty for a term of years, to put the new industry on its feet. Considerable sums have already been spent by private interests in experimenting with Ontario ores.

# Prices Finished Iron and Steel f.o.b. Pittsburgh

Carload Lots

## Plates

Sheared, tank quality, base, per lb.....2.50c.

## Structural Materials

Beams, channels, etc., base, per lb.....2.50c.  
Sheet piling .....2.65c.

## Iron and Steel Bars

Soft steel bars, base, per lb.....2.40c.  
Soft steel bars for cold finishing.....\$3 per ton over base  
Reinforcing steel bars, base.....2.40c.  
Refined iron bars, base, per lb.....3.10c. to 3.15c.  
Double refined iron bars, base, per lb.....4.75c.  
Stay bolt iron bars, base, per lb.....7.75c. to 8c.

## Hot-Rolled Flats

Hoops, base, per lb.....3c.  
Bands, base, per lb.....3c.  
Strips, base, per lb.....3c.  
Cotton ties, per bundle of 45 lb.....\$1.63

## Cold-Finished Steels

Bars and shafting, base, per lb.....3c.  
Bars, S. A. E. Series, No. 2100.....4.75c.  
Bars, S. A. E. Series, No. 2300.....6.25c. to 6.50c.  
Bars, S. A. E. Series, No. 3100.....5.25c. to 5.50c.  
Strips, base, per lb.....5.00c.

## Wire Products

Nails, base, per keg.....\$3.00  
Galvanized nails, 1 in. and over.....\$2.25 over base  
Galvanized nails, less than 1 in. ....2.50 over base  
Bright plain wire, base, No. 9 gage, per 100 lb.....\$2.75  
Annealed fence wire, base, per 100 lb.....2.90  
Spring wire, base, per 100 lb.....3.70  
Galvanized wire, No. 9, base, per 100 lb.....3.35  
Galvanized barbed, base, per 100 lb.....3.80  
Galvanized staples, base, per keg.....2.80  
Painted barbed wire, base, per 100 lb.....3.45  
Polished staples, base, per keg.....3.45  
Cement coated nails, base, per count keg.....2.70  
Woven fence, carloads (to jobbers).....67½ per cent off list  
Woven fence, carloads (to retailers).....65 per cent off list

## Bolts and Nuts

Machine bolts, small, rolled threads, 60, 10 and 10 per cent off list  
Machine bolts, all sizes, cut threads..60 and 10 per cent off list  
Carriage bolts, ¾ x 6 in.:  
Smaller and shorter, rolled threads. 60 and 10 per cent off list  
Carriage bolts, cut threads, all sizes.....60 per cent off list  
Lag bolts .....65 and 10 per cent off list  
Flow bolts, Nos. 1, 2 and 3 heads..50 and 10 per cent off list  
Other style heads.....20 per cent extra  
Machine bolts, c.p.c. and t. nuts, ¾ x 4 in., 50 and 10 per cent off list  
Larger and longer sizes.....50 and 10 per cent off list  
Hot pressed square or hex. nuts, blank.....4.25c. off list  
Hot pressed nuts, tapped.....4.25c. off list  
C.p.c. and t. square or hex. nuts, blank.....4.00c. off list  
C.p.c. and t. square or hex. nuts, tapped.....4.00c. off list  
Semi-finished hex. nuts:  
¾ in. and smaller, U. S. S.....80 and 5 per cent off list  
¾ in. and larger, U. S. S.....75 and 5 per cent off list  
Small sizes, S. A. E.....80, 10 and 5 per cent off list  
S. A. E., ¾ in. and larger.....75, 10 and 5 per cent off list  
Stove bolts in packages.....75, 10 and 5 per cent off list  
Stove bolts in bulk.....75, 10, 5 and 2½ per cent off list  
Tire bolts .....60 and 10 per cent off list  
Bolt ends with hot pressed nuts.....60 and 5 per cent off list  
Turnbuckles, with ends, ½ in. and smaller, 55 and 5 to 50 per cent off list  
Turnbuckles, without ends, ½ in. and smaller, 70 and 10 to 65 and 5 per cent off list  
Washers .....5c. to 5.25c. off list

## Semi-Finished Castellated and Slotted Nuts

(To jobbers and consumers in large quantities f.o.b. Pittsburgh.)

| Per 1000 |          |          | Per 1000 |          |          |
|----------|----------|----------|----------|----------|----------|
| ¾-in.    | S. A. E. | U. S. S. | ¾-in.    | S. A. E. | U. S. S. |
| 4.80     | 4.80     |          | 15.00    | 15.00    |          |
| 5.50     | 6.00     |          | 19.50    | 20.00    |          |
| 6.50     | 7.00     |          | 28.50    | 28.50    |          |
| 9.00     | 9.50     |          | 37.00    | 37.50    |          |
| 11.00    | 11.50    |          | 58.50    | 60.50    |          |

Larger sizes—Prices on application.

## Cap and Set Screws

Milled square and hex. head cap screws...70 per cent off list  
Milled set screws.....70 per cent off list  
Upset cap screws.....75 and 10 per cent off list  
Upset set screws.....75 and 10 per cent off list  
Milled studs .....50 and 10 per cent off list

## Rivets

Large structural and ship rivets, base, per 100 lb..\$2.65 to \$2.85  
Small rivets .....70 to 65 and 10 off list

## Track Equipment

Spikes, ½ in. and larger, base, per 100 lb.....\$3.15  
Spikes, ½ in., ⅜ in. and ¼ in., per 100 lb.....\$3.15 to 3.25  
Spikes, ⅜ in.....3.15 to 3.25  
Spikes, boat and barge, base, per 100 lb.....3.50  
Track bolts, ¾ in. and larger, base, per 100 lb...4.00 to 4.25  
Track bolts, ½ in. and ¾ in., base, per 100 lb...5.00 to 5.50  
Tie plates, per 100 lb.....2.55 to 2.60  
Angle bars, base, per 100 lb.....2.75

## Welded Pipe

| Steel     |       | Butt Weld |          | Iron  |       |
|-----------|-------|-----------|----------|-------|-------|
| Inches    | Black | Galv.     | Inches   | Black | Galv. |
| 1½        | 45    | 19½       | 1½ to ¾  | +11   | +39   |
| 1½ to ¾   | 51    | 25½       | ¾        | 22    | 2     |
| 1½        | 56    | 42½       | ¾        | 28    | 11    |
| 1½        | 60    | 48½       | 1 to 1½  | 30    | 13    |
| 1 to 3    | 62    | 50½       |          |       |       |
|           |       |           | Lap Weld |       |       |
| 2         | 55    | 43½       | 2        | 23    | 7     |
| 2½ to 6   | 59    | 47½       | 2½       | 26    | 11    |
| 7 and 8   | 56    | 43½       | 3 to 6   | 28    | 13    |
| 9 and 10  | 54    | 41½       | 7 to 12  | 26    | 11    |
| 11 and 12 | 53    | 40½       |          |       |       |

| Butt Weld, extra strong, plain ends |    | Lap Weld, extra strong, plain ends |         |
|-------------------------------------|----|------------------------------------|---------|
| 1½                                  | 41 | 24½                                | 2 to 3  |
| 1½ to ¾                             | 47 | 30½                                | ¾ to ¾  |
| 1½                                  | 53 | 42½                                | ¾       |
| 1½                                  | 58 | 47½                                | ¾       |
| 1 to 1½                             | 60 | 49½                                | 1 to 1½ |
|                                     |    |                                    |         |
| 2                                   | 53 | 42                                 | 2       |
| 2½ to 4                             | 57 | 46½                                | 2½ to 4 |
| 4½ to 6                             | 56 | 45½                                | 4½ to 6 |
| 7 to 8                              | 52 | 39½                                | 7 to 8  |
| 9 and 10                            | 45 | 32½                                | 9 to 12 |
| 11 and 12                           | 44 | 31½                                |         |

To the large jobbing trade the above discounts are increased by one point, with supplementary discounts of 5 per cent on black and 1½ points, with a supplementary discount of 5 per cent on galvanized.

## Boiler Tubes

| Lap Welded Steel   | Charcoal Iron      |
|--------------------|--------------------|
| 2 to 2½ in.....27  | 1½ in.....+18      |
| 2½ to 3 in.....37  | 1½ to 1¾ in.....+8 |
| 3 in.....40        | 2 to 2½ in.....2   |
| 3½ to 4 in.....42½ | 2½ to 3 in.....7   |
| 4 to 13 in.....46  | 3½ to 4½ in.....9  |

Less carload lots 4 points less.

## Standard Commercial Seamless Boiler Tubes

| Cold Drawn              |                        |
|-------------------------|------------------------|
| 1 in.....55             | 3 and 3½ in.....36     |
| 1½ and 1½ in.....47     | 3½ and 3½ in.....37    |
| 1½ in.....31            | 4 in.....41            |
| 2 and 2½ in.....23      | 4½ in. and 5 in.....33 |
| 2½ and 2½ in.....32     |                        |
| Hot Rolled              |                        |
| 3 and 3½ in.....38      | 4 in.....43            |
| 3½ in. and 3½ in.....39 |                        |

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extras for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be sold at mechanical tube list and discount. Intermediate sizes and gages not listed take price of net larger outside diameter and heavier gage.

## Seamless Mechanical Tubing

Carbon under 0.30, base.....83 per cent off list  
Carbon 0.30 to 0.40, base.....81 per cent off list  
Plus usual differentials and extras for cutting. Warehouse discounts range higher.

## Seamless Locomotive and Superheater Tubes

| Cents per Ft.            |                          | Cents per Ft. |  |
|--------------------------|--------------------------|---------------|--|
| 2-in. O.D. 12 gage....15 | 2½-in. O.D. 10 gage...20 |               |  |
| 2-in. O.D. 11 gage....16 | 3-in. O.D. 7 gage....35  |               |  |
| 2-in. O.D. 10 gage....17 | 1½-in. O.D. 9 gage....15 |               |  |
| 2½ in. O.D. 12 gage...17 | 5½-in. O.D. 9 gage...55  |               |  |
| 2½-in. O.D. 11 gage...18 | 5½-in. O.D. 9 gage...57  |               |  |

## Tin Plate

Standard cokes, per base box.....\$5.50

## Terne Plate

| (Per Package, 20 x 28 in.)        |                              |
|-----------------------------------|------------------------------|
| 8-lb. coating, 100 lb.....\$11.00 | 25-lb. coating I. C....16.20 |
| base.....11.00                    | 30-lb. coating I. C....17.35 |
| 8-lb. coating I. C....11.30       | 35-lb. coating I. C....18.35 |
| 12-lb. coating I. C....12.70      | 40-lb. coating I. C....19.35 |
| 15-lb. coating I. C....13.95      |                              |

## Sheets

Blue Annealed  
Nos. 9 and 10 (base), per lb.....2.90c. to 3c.  
Box Annealed, One Pass Cold Rolled  
No. 28 (base), per lb.....3.75c. to 3.85c.  
Automobile Sheets  
Regular auto body sheets, base (22 gage), per lb.....5.35c.  
Galvanized  
No. 28 (base), per lb.....4.85 to 5c.  
Long Ternes  
No. 28 gage (base), 8-lb. coating, per lb.....5.30c.  
Tin-Mill Black Plate  
No. 28 (base), per lb.....3.85c.



# Prices of Raw Materials, Semi-Finished and Finished Products

## Ores

| Lake Superior Ores, Delivered Lower Lake Ports  |                   |
|---|-------------------|
| Old range Bessemer, 55 per cent iron.....   | \$6.45            |
| Old range non-Bessemer, 51½ per cent iron.....  | 5.70              |
| Mesabi Bessemer, 55 per cent iron.....  | 6.20              |
| Mesabi non-Bessemer, 51½ per cent iron.....   | 5.55              |
| Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore   |                   |
| Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian..                         | 10.50c.           |
| Iron ore, Swedish, average 66 per cent iron   | 10.50c.           |
| Manganese ore washed, 51 per cent manganese, from the Caucasus, nominal.....                                  | 41c.              |
| Manganese ore, ordinary, 48 per cent manganese, from the Caucasus.....  | 38c.              |
| Manganese ore, Brazilian or Indian, nominal   | 42c.              |
| Tungsten ore, per unit, in 60 per cent concentrates   | \$8.25 to \$10.00 |
| Chrome ore, basic, 48 per cent Cr <sub>2</sub> O <sub>3</sub> , crude, per ton, c.i.f. Atlantic seaboard..... | 18.00 to 23.00    |
| Molybdenum ore, 85 per cent concentrates, per lb. of MoS <sub>3</sub> , New York.....                         | 75c. to 85c.      |

## Ferroalloys

|  |                      |
|--|----------------------|
| Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton.....                    | \$107.50 to \$110.00 |
| Ferromanganese, British, 80 per cent, f.o.b. Atlantic port, duty paid.....                   | 107.50 to 110.00     |
| Ferrotungsten, per lb. contained metal.....  | 88c. to 90c.         |
| Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered | 12c.                 |
| Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.                        | 11.50c.              |
| Ferrovanadium, per lb. contained vanadium  | \$3.50 to \$4.00     |
| Ferrocobaltititanium, 15 to 18 per cent, per net ton   | 200.00               |

## Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

|  |                   |
|--|-------------------|
| Spiegeleisen, domestic, 19 to 21 per cent....  | \$40.00           |
| Spiegeleisen, domestic, 16 to 19 per cent....  | 39.00             |
| Ferrosilicon, 50 per cent, delivered.....  | \$80.00 to \$2.50 |
| Ferrosilicon, Bessemer, 10 per cent, \$41.50; 11 per cent, \$44; 12 per cent, \$48.50; 13 per cent, \$52.10; 14 per cent, \$57.10.                                 |                   |
| Silvery iron, 6 per cent, \$30.00; 7 per cent, \$31.00; 8 per cent, \$32.50; 9 per cent, \$34.50; 10 per cent, \$36.50; 11 per cent, \$39.00; 12 per cent \$41.50. |                   |

## Fluxes and Refractories

Prices and Specifications

|  |                    |
|--|--------------------|
| Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines ..... | \$22.00            |
| Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines ..... | 23.50              |
| Per 1000 f.o.b. works:   |                    |
| Fire Clay:   |                    |
| High Duty  | Moderate Duty      |
| Pennsylvania .....   | \$42.00 to \$45.00 |
| Maryland .....   | \$27.00 to \$42.00 |
| Ohio .....   | 42.00 to 47.00     |
| Kentucky .....   | 42.00 to 43.00     |
| Illinois .....   | 37.00 to 42.00     |
| Missouri .....   | 37.00 to 43.00     |
| Ground fire clay, per net ton.....   | 42.00 to 45.00     |
|  | 35.00 to 40.00     |
|  | 6.00 to 7.00       |
| Silica Brick:  |                    |
| Pennsylvania .....   | 42.00              |
| Chicago .....  | 49.00              |
| Birmingham .....   | 50.00              |
| Ground silica clay, per net ton.....   | 5.00               |
| Magnesite Brick:   |                    |
| Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.) .....   | 65.00              |
| Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.) .....   | 40.00              |
| Chrome Brick:  |                    |
| Standard size, per net ton .....   | 50.00              |

## Semi-Finished Steel, F.O.B. Pittsburgh or Youngstown, per gross ton

|  |                          |
|--|--------------------------|
| Rolling billets, 4-in. and over.....             | \$40.00                  |
| Rolling billets, 2-in. and under.....            | 40.00                    |
| Forging billets, ordinary carbons.....           | 45.00                    |
| Sheet bars, Bessemer.....                        | 42.50                    |
| Sheet bars, open-hearth.....                     | 42.50                    |
| Slabs.....                                       | \$40.00                  |
| Wire rods, common soft, base, No. 5 to ¼-in..... | 51.00                    |
| Wire rods, common soft, coarser than ¼-in.       | \$2.50 over base         |
| Wire rods, screw stock.....                      | \$5.00 per ton over base |
| Wire rods, carbon 0.20 to 0.40.....              | 3.00 per ton over base   |
| Wire rods, carbon 0.41 to 0.55.....              | 5.00 per ton over base   |
| Wire rods, carbon 0.56 to 0.75.....              | 7.50 per ton over base   |
| Wire rods, carbon over 0.75.....                 | 10.00 per ton over base  |
| Wire rods, acid.....                             | 15.00 per ton over base  |
| Skelp, grooved, per lb.....                      | 2.35c. to 2.40c.         |
| Skelp, sheared, per lb.....                      | 2.35c. to 2.40c.         |
| Skelp, universal, per lb.....                    | 2.35c. to 2.40c.         |

## Finished Iron and Steel, F.O.B. Mill

|   |                  |
|---|------------------|
| Rails, heavy, per gross ton                       | \$43.00          |
| Rails, light, new steel, base, lb.....            | 2.25c.           |
| Rails, light, rerolled, base, per lb.....         | 1.85c. to 2.00c. |
| Spikes, ½-in. and larger, base, per 100 lb....    | \$3.15           |
| Spikes, ½-in. and smaller, base per 100 lb....    | \$3.15 to 3.50   |
| Spikes, boat and barge, base, per 100 lb....      | 3.50             |
| Track bolts, ½-in. and smaller, base, per 100 lb. | 4.00 to 4.25     |
| Track bolts, ¾-in. and larger, base, per 100 lb.  | 4.50 to 5.00     |
| Tie plates, per 100 lb.                           | 2.55 to 2.60     |
| Angle bars, per 100 lb.                           | 2.75             |
| Bars, common iron, base, per lb., Chicago mill    | 2.40c.           |
| Bars, common iron, Pittsburgh mill                | 2.40c.           |
| Bars, rails, steel reinforcing, base, per lb....  | 2.15c. to 2.25c. |
| Ground shafting, base, per lb.....                | 3.40c.           |
| Cut nails, base, per keg.....                     | \$3.15 to \$3.25 |

## Alloy Steel

| S.A.E. Series Numbers   | Bars 100 lb. |
|---|--------------|
| 2100* (½% Nickel, 10 to 20 per cent Carbon)...                                | \$3.50       |
| 2300 (3¼% Nickel)   | 5.00 to 5.25 |
| 2500 (5% Nickel)  | 7.75 to 8.00 |
| 3100 (Nickel Chromium)  | 4.00 to 4.25 |
| 3200 (Nickel Chromium)  | 5.75 to 6.00 |
| 3300 (Nickel Chromium)  | 8.00 to 8.25 |
| 3400 (Nickel Chromium)  | 7.00 to 7.25 |
| 5100 (Chromium Steel)   | 3.75         |
| 5200* (Chromium Steel)  | 7.50 to 8.00 |
| 6100 (Chromium Vanadium bars).....  | 4.75 to 5.00 |
| 6100 (Chromium Vanadium spring steel).....                                    | 4.50 to 4.75 |
| 9250 (Silico Manganese spring steel).....                                     | 3.75 to 4.00 |
| Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)            | 5.00 to 5.25 |
| Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum).....      | 4.50 to 4.75 |
| Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)           | 4.25 to 4.50 |
| Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)..... | 4.75 to 5.00 |

Above prices are for hot-rolled alloy steel bars, forging quality, per 100 lb., f.o.b. Pittsburgh. Billets 4 x 4 in. and larger are \$10 per gross ton less than net ton price for bars of same analyses. On smaller than 4 x 4-in. billets down to and including 2¼-in. sq. there is a size extra of \$10 per gross ton; on billets smaller than 2¼-in. sq., the net ton bar price applies.

\*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

## Freight Rates

All freight rates from Pittsburgh on finished iron and steel products, carload lots, per 100 lb.:

|                             |        |                       |         |                         |        |                              |        |
|-----------------------------|--------|-----------------------|---------|-------------------------|--------|------------------------------|--------|
| Philadelphia, domestic..... | \$0.32 | Buffalo.....          | \$0.265 | St. Louis.....          | \$0.43 | Pacific Coast.....           | \$1.15 |
| Philadelphia, export.....   | 0.235  | Cleveland.....        | 0.215   | Kansas City.....        | 0.735  | Pac. Coast, ship plates      | 1.34   |
| Baltimore, domestic.....    | 0.31   | Cleveland, Youngstown |         | Kansas City (pipe)..... | 0.705  | Birmingham.....              | 0.58   |
| Baltimore, export.....      | 0.225  | Comb.....             | 0.19    | St. Paul.....           | 0.60   | Memphis.....                 | 0.56   |
| New York, domestic.....     | 0.34   | Detroit.....          | 0.29    | Omaha.....              | 0.735  | Jacksonville, all rail..     | 0.70   |
| New York, export.....       | 0.255  | Cincinnati.....       | 0.29    | Omaha (pipe).....       | 0.705  | Jacksonville, rail and water | 0.415  |
| Boston, domestic.....       | 0.365  | Indianapolis.....     | 0.31    | Denver.....             | 1.27   | New Orleans.....             | 0.67   |
| Boston, export.....         | 0.255  | Chicago.....          | 0.34    | Denver (pipe).....      | 1.215  |                              |        |

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 35c.; ship plates, 40c.; ingot and muck bars, structural steel, common wire products including cut or wire nails, spikes, and wire hoops, 40c.; sheets and tin plates, 40c.; sheets, No. 12 gage and lighter, 50c.; rods, 40c.; wire rope cables and strands, 45c.; wire fencing, netting and stretcher, 40c.; pipes not over 12 in. in diameter, 55c.; over 12 in. in diameter, 2¼c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

## FABRICATED STEEL BUSINESS

Over 21,000 Tons of Fresh Inquiries, Not Including Some 30,000 Tons for Ford Motor Co.

Fabricated steel awards for 15 projects totaled 11,000 tons. Including 10,000 tons for the new Palmer House, Chicago, and 20,100 tons of 30,900 tons pending for the Ford Motor Co., new work under consideration calls for 41,500 tons. Awards include:

James Munroe High School, New York, 2800 tons, to Jones & Laughlin Steel Corporation.

City of Philadelphia, tunnel in Fairmount Park, 360 tons, to unnamed fabricator.

Masonic Temple, Springfield, Mass., 950 tons, will be awarded to Lehigh Structural Steel Co. or Bethlehem Fabricators, Inc.

Storehouse, Long Island City, William S. Kenny, general contractor, 150 tons, to Levering & Garrigues Co.

Western Sugar Refinery, char house, San Francisco, 816 tons, to Pacific Rolling Mill Co.

Pacific Steamship Co., pier shed, 600 tons, to Hofuis Steel & Equipment Co.

Yonkers Building, Des Moines, Iowa, 450 tons, to Pittsburgh-Des Moines Steel Co.

Eagle Iron Works plant, Des Moines, Iowa, 300 tons, to Pittsburgh-Des Moines Steel Co.

Pennsylvania Railroad System, superstructure over subway, Fifty-sixth Street, Chicago, 358 tons, to American Bridge Co.

Central Steel & Wire Co., warehouse and office building, Chicago, 263 tons, to A. Bolters Sons.

Nebraska Power Co., central sub-station, Omaha, Neb., 228 tons, to Omaha Structural Steel Co.

Pennsylvania Railroad System, Richmond, Ind., 92-ft. half through plate girder span, 108 tons, to Fort Pitt Bridge Works.

U. S. Engineer Office, Louisville, nine steel derricks for barges, 350 tons, to Lakeside Bridge & Steel Co.

Walbridge building, Buffalo, 1000 tons, to Bancroft-Jones Corporation.

Standard Oil Co., Cleveland, crane runways, 550 tons, to Massillon Bridge & Structural Co.

Hillside Bridge, Cleveland, 200 tons, to American Bridge Co.

Republic Iron & Steel Co., Youngstown, extension to open-hearth plant, 700 tons, to the McClintic Marshall Co.

Ford Motor Co., Detroit, sub-station No. 15, 350 tons, and office building, 120 tons, to McClintic-Marshall Co.

Lehigh Coal & Navigation Co., concentrator plant at Seek, Pa., 175 tons, to Bethlehem Construction Co.

### Structural Projects Pending

Inquiries for fabricated steel work include the following:

New York, five public schools: James Madison High School, 1500 tons; school No. 99, 1500 tons; two other schools of 1200 tons each and one of 600 tons; total, 6000 tons.

Hoffman manufacturing building, Newark, N. J., 400 tons.

Hebrew Orphan Asylum, New York, 100 tons.

Apartment building, Broadway and Eighty-third Street, New York, 1000 tons.

Seacoast building, Asbury Park, N. J., 100 tons.

Apartment building at 72 West Sixty-eight Street, New York, 300 tons.

Presto lunch building, Newark, N. J., 200 tons.

New Palmer House, Chicago, 10,000 tons, bids to be asked soon.

Northern Pacific Railroad, miscellaneous bridges, 1700 tons, bids taken.

Ford Motor Co., press and forge shops, River Rouge, 9700 tons; additional units for steel plant, River Rouge, 10,000 tons; assembling plant, St. Paul, Minn., bids asked on revised plans calling for 6300 tons; assembling plant, Kansas City, Mo., 400 tons.

Highway bridge, Wilbraham, Mass., 250 tons.

Memorial Hospital, Niagara Falls, N. Y., 250 tons.

Philadelphia Electric Co., turbine supports, 100 tons.

## RAILROAD EQUIPMENT BUYING

Prospective Car Business Put at 94,000—Actual New Inquiries About 10,000

Inquiries and early expectations now put prospective car business as totaling 94,000 cars. Included are 10,000 to 11,000 for the Southern Pacific, 6000 for the Norfolk & Western, an unnamed number for the Pennsylvania Railroad and 3000 for the Pacific Fruit Express.

On Nov. 1 of all freight cars 6.6 per cent were in need of repair, against 6.9 per cent on Oct. 15. From Jan. 1 to Nov. 1 a total of 155,872 new freight cars were installed in service. There were also placed in service during the first ten months this year 3371 new locomotives. The railroads on Nov. 1 had 48,571 new freight cars and 942 new locomotives on order. Fewer locomotives were in need of repair on Nov. 1 than there have been in years. The number was 15.8 per cent, against 16.4 per cent on Oct. 15.

The Southern Pacific has entered the market for 6555 cars as follows: 2975 50-ton single sheathed box cars, 950 flat cars, 205 12,500-gal. oil tank cars, 75 8-wheel caboose cars, 500 50-ton single sheathed automobile cars, 250 40-ton stock cars, 600 drop bottom gondola general service cars of 50-ton capacity, 500 tight-bottom gondola cars of 50 tons capacity, and 500 logging cars of 40-ton capacity. The same road is expected to issue inquiries for 3500 additional cars before the close of the week.

The Union Pacific has completed drawings and specifications for 3000 refrigerator cars for the Pacific Fruit Express and formal inquiries will be sent out shortly.

The St. Louis Southwestern is inquiring for 1000 box cars.

The Western Pacific is in the market for 200 automobile box cars.

The Alabama & Vicksburg Railroad is in the market for 200 box cars, 100 gondolas and 100 flat cars.

The Southern Railway has inquired for 1000 box cars and 1000 steel center constructions.

The Fruit Growers' Express is asking for prices on 100 steel underframes for freight cars.

The Ann Arbor Railroad wants prices on 500 box cars.

The distribution of the coke cars for repair by the Carnegie Steel Co., mentioned a week ago, was as follows: Koppel Car Repair Co., 248; Greenville Steel Car Co., 200; Federal Shipbuilding Co., 50.

### Brazilian Manganese Exports, 1923

Manganese ore exports from Brazil during the first half of the current year totalled 160,265 gross tons, compared with 156,253 tons during the corresponding half of 1922.

The Ford Motor company has established a temporary assembly plant in Kobe, Japan, to operate during the rebuilding of the plant at Yokohama, which was destroyed at the time of the earthquake. Orders for trucks at the rate of 400 to 500 per month continue to come in and the last of the order for 1000 Ford one-ton truck chassis, ordered by the city of Tokio, was forwarded Oct. 31.

The plant of the Garden City Foundry Co., 3176 Archer Avenue, Chicago, has been purchased by the Mortimer Foundry Co., Chicago. The latter company has moved into the former Garden City plant, having given up the lease to its former location.

H. A. Frommelt, the Falk Corporation, Milwaukee, will deliver an address on apprenticeship training in foundries and industrial education for foundry workers, before the Quad City Foundrymen's Association at the LeClaire Hotel, Moline, Ill., Nov. 26.

The Jones & Laughlin Steel Corporation, Pittsburgh, has awarded a contract to the Minter Homes Co., Greenville, S. C., for the erection of 100 houses at Woodlawn, Beaver County, adjacent to its plant at Aliquippa, for operatives at this mill.



## NON-FERROUS METALS

### The Week's Prices

|              | Cents per Pound for Early Delivery |                |              |          |           |          |           |  |
|--------------|------------------------------------|----------------|--------------|----------|-----------|----------|-----------|--|
|              | Copper, New York                   |                | Straits      | Lead     |           | Zinc     |           |  |
|              | Lake                               | Electro-lytic* | Tin New York | New York | St. Louis | New York | St. Louis |  |
| Nov. 14..... | 13.62½                             | 13.25          | 43.37½       | 6.90     | 6.55      | 6.80     | 6.45      |  |
| 15.....      | 13.62½                             | 13.12½         | 43.00        | 6.90     | 6.55      | 6.75     | 6.40      |  |
| 16.....      | 13.50                              | 13.00          | 42.87½       | 6.90     | 6.60      | 6.70     | 6.35      |  |
| 17.....      | 13.50                              | 13.00          |              | 6.90     | 6.60      | 6.67½    | 6.32½     |  |
| 19.....      | 13.50                              | 12.75          | 43.50        | 6.90     | 6.65      | 6.65     | 6.30      |  |
| 20.....      | 13.50                              | 12.75          | 44.25        | 6.95     | 6.70      | 6.65     | 6.30      |  |

\*Refinery quotation; delivered price ¼c. higher.

### New York

NEW YORK, Nov. 20.

The sharp declines in the foreign exchanges have had a deterrent influence on most of the markets. Buying of copper has almost ceased and prices are lower. The tin market continues moderately active, with prices changed but little. Demand for lead is good and the market is slightly higher. Zinc has declined and demand is still light.

**Copper.**—The activity which was so pronounced a week ago ceased suddenly about the middle of last week and prices have declined quite sharply since. The uncertainty as to the attitude between France and England and particularly the decline in the pound sterling, with the resultant effect upon export sales of copper, were the principal causes. Buying has almost ceased both for foreign and domestic account and prices have gradually sagged until electrolytic copper today is quoted at a minimum of 13c., delivered. So little business is being done that this price is almost nominal, large producers being out of the market at less than 13.50c., delivered, and the light demand being satisfied by custom smelters and second hands. In small lots probably 13c., delivered, could be slightly shaded. Sales were so heavy up to the break in the market that both buyers and sellers are waiting for developments. Lake copper is quoted, largely nominal, at 13.50c., delivered.

**Tin.**—Buying of Straits tin has been in fairly large volume, with business done nearly every day, except yesterday, when the violent fluctuations in the pound sterling made transactions practically impossible. From Tuesday, Nov. 13, to yesterday, Nov. 19, inclusive, approximately 1000 tons changed hands, with dealers and consumers participating, the latter being good buyers and manifesting more interest than for some time. Were it not for the setback in exchange and in the London market, it is probable that the buying would have expanded, as consumers are apparently ready to make larger purchases, for it is evident that they must come into the market more extensively. The statistical position in general is growing stronger and there are those who believe that prices may advance in the near future. The market today was moderately active with spot Straits tin quoted at 44.25c., New York. Quotations in London were only slightly changed from those of a week ago with spot standard quoted today at £221 5s., future standard at £221 15s. and spot Straits at £221 15s. Arrivals thus far this month have been 3950 tons, with 4199 tons reported afloat.

**Lead.**—This market is quiet and firm. Prices of independent producers are advancing with sales made at 6.70c. to 6.75c., St. Louis, and 6.95c. to 7c., New York. The quotation of the leading interest is unchanged at 6.85c., New York, with independents apparently taking most of the business. Demand continues satisfactory and consumption heavy.

**Zinc.**—The zinc market has been affected by the fall in exchange and in prices on the London market, these factors being more predominant than the domestic situation, which continues dull. Buying is on a small scale. Prime Western for November-December delivery is quoted at 6.30c., St. Louis, or 6.65c., New York.

**Nickel.**—Quotations for shot and ingot nickel are unchanged at 29c. to 32c. per lb., with electrolytic

nickel held at 32c. by the leading producers. In the outside market both shot and ingot nickel are quoted at 29c. to 32c.

**Antimony.**—After a decline during the week to 9c., New York, duty paid, for wholesale lots of Chinese metal, the market has again turned strong with 9.25c. asked and paid for spot and early delivery.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, is quoted by importers at 25c. to 26c. per lb., duty paid, New York, with some sellers unable to obtain the metal from their principals. The Ford Motor Co. is inquiring for 150 tons of ingots.

**Old Metals.**—The tone of the market is not as good though prices hold fairly well. Dealers' selling prices are as follows:

|   | Cents Per Lb. |
|---|---------------|
| Copper, heavy and crucible.....           | 13.00         |
| Copper, heavy and wire.....               | 12.00         |
| Copper, light and bottoms.....            | 10.50         |
| Heavy machine composition.....            | 10.75         |
| Brass, heavy.....                         | 8.00          |
| Brass, light.....                         | 6.50          |
| No. 1 red brass of composition turnings.. | 9.00          |
| No. 1 yellow red brass turnings.....      | 7.25          |
| Lead, heavy.....                          | 6.50          |
| Lead, tea.....                            | 5.50          |
| Zinc.....                                 | 5.00          |
| Cast aluminum.....                        | 16.75         |
| Sheet aluminum.....                       | 16.75         |

### Chicago

CHICAGO, Nov. 20.—The general tone of the market is improved and copper, tin and lead have again advanced. A considerable number of copper users who had consistently postponed their purchases have finally been forced into the market and have bought rather freely. Tin is closely held both here and abroad, and tends to advance with every indication of demand. The statistical position of lead is good and prices are firm, although buying is not particularly heavy. The zinc situation is not so favorable from a statistical standpoint, but prices show no recession. Old metal prices remain unchanged, but advances are looked for. We quote in carload lots: Lake copper, 13.75c.; tin, 44.50c.; lead, 6.65c.; spelter, 6.40c.; antimony, 11c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 10.50c.; copper bottoms, 9.25c.; red brass, 8.50c.; yellow brass, 6.50c.; lead pipe, 5.50c.; zinc, 4.25c.; pewter, No. 1, 23c.; tin foil, 30c.; block tin, 35c.; all buying prices for less than carload lots.

### Chain Belt Co. on Pacific Coast

Chain Belt Co., Milwaukee, manufacturer of Rex chain, transmission machinery and conveying equipment, formerly represented on the Pacific Coast by Meese & Gottfried Co., San Francisco, has established direct factory branches and warehouses in Portland and Seattle. Arrangements have also been made with the Washington Machinery Depot, Tacoma, Wash., to carry a stock of Rex chain and transmission machinery. Other stocks are to be placed in important centers in the Pacific Northwest.

The northwest territory, with headquarters at Portland, will be in charge of Allen C. Sullivan, a graduate of the University of Washington. Mr. Sullivan was formerly connected with the Allis-Chalmers Mfg. Co., and more recently with Smith & Watson Iron Works of Portland as chief engineer. Just previous to his association with the Chain Belt Co. he was engaged in special sawmill work as consulting engineer. Don C. Catton, formerly with Meese & Gottfried Co. and later engaged in the machinery supply business on his own account will be the special sales representative for the Portland office.

The Seattle and British Columbia territory will be handled by William F. Nichols out of the Seattle office. Mr. Nichols for the past 11 years has been connected with the Meese & Gottfried Co.

The Portland office of the Chain Belt Co. is located at 67 and 69 First Street, Portland, and the Seattle office at 1040 Sixth Avenue South, Seattle.

## TEST BARS FOR CASTINGS

### Differences Between Metal in the Piece and That in the Test Bar

MANCHESTER, ENGLAND, Nov. 3.—In view of the recent acute controversy on the subject of test bars in this country and in America, much interest attached to the lecture which was delivered to the Institute of British Foundrymen here today by J. S. Glen Primrose, a member of the American Society for Testing Materials.

Mr. Primrose, who used lantern slides and exhibited specimens, said that cast iron test bars in many cases bore no relation to the size and section of the important places in the casting. The transverse bending test constituted merely a test of the metal in the bar itself and took no consideration of the similarity or difference in the constitution between the test pieces and what they were intended to represent. The round section was better than the square as it eliminated the harmful effects of cross grain crystallization at the corners.

#### Cross Section of Test Bar

The rule hitherto followed of making the load requirements vary for different lengths of test bars in cast iron, with a mathematical formula connecting the two, was not satisfactory. For example the class of metal which would be called upon to withstand 30 cwt. on a 36-in. span, when asked to give 90 cwt. on a 12-in. span with the same 1 x 2 in. section, was really given a more exacting test and one more difficult to meet without taking extraordinary precautions in the casting conditions of the smaller bar.

For non-ferrous metal castings the circular test

bar was almost universal. The plain 1-in. diameter bar has found general acceptance here. The American practice of skimming the surface to get a smooth circumference before tension testing gives a higher value when the bar is sound.

With regard to compression tests the speaker emphasized the length of a specimen as of importance, for cast iron failed finally by shearing at an angle of approximately 45 deg. in the direction of loading. The length should be at least  $1\frac{1}{4}$  times the diameter for a round specimen. A compression test bar which had been considerably bent without fracture was shown.

Suitable machines for performing all kinds of tests were described in detail by Mr. Primrose, some of them for the first time as they were of recent design.

#### Discussion

At the conclusion of the lecture several questions were asked. Mr. Rowe expressed the opinion that in hardness testing much more satisfactory results were obtained with a large bar. The value of impact testing of cast iron was not sufficiently realized and engineers too often regarded tensile and transverse tests as sufficient. The effect of phosphorus was not clearly shown in the transverse test. Cast iron work had often to have a strong resistance to shock. With regard to the round test bar these were not always dead true and an oval test bar did not give accurate results, but this could be got over by slight machining.

In answer to another questioner, Mr. Primrose gave the opinion that three test bars were better than one sized bar tested with different loads. He said that cast iron testing was still a virgin field. He agreed with those who contended that hardness tests only indicate the hardness at one spot. Tensile tests were only valuable when shackles with spherical seats were used.

### New Edition of Mr. Butler's "Fifty Years of Iron and Steel"

Joseph G. Butler, Jr., has just issued the seventh edition of his valuable book, "Fifty Years of Iron and Steel." Mr. Butler, who will celebrate his eighty-third birthday on Dec. 21, is still suffering from the injuries received several years ago when he was struck by a truck, but his interest is as keen as ever in the iron business with which he has been so long connected. Mr. Butler in an author's note says:

"Since the last edition of this work was exhausted, so many requests have been received for it that it has been thought necessary to have it reprinted. Practically no change has been made since the book was last printed except the addition of a short chapter on the beginning and development of the open-hearth steel process in America and one or two illustrations. The author expects that this will be the final edition, and takes the opportunity to express his appreciation of the public approval, generously given in hundreds of letters from all parts of the world, chiefly from men engaged in the iron and steel industries. Having been actively interested in these industries for 66 years, it has been a pleasure for him to contribute something to their literature in the form of even this brief and imperfect sketch of their remarkable progress during that period."

### Friendly Receivership for Stevenson Gear Co.

On Monday, Nov. 12, F. E. Moskovics, who for a number of years past has been vice-president of Nordyke-Marmon Co., was appointed receiver for the Stevenson Gear Co., Indianapolis. The Stevenson company manufactures the Stevenson multiple gear shaper, notable for its speed of production.

The receivership is a friendly one, concurred in by the controlling stock interests, creditors and the management. Under the jurisdiction of the court the receiver is empowered to enter negotiations for the sale of the rights of the tool and operate the business gen-

erally. In the meantime, he has been empowered to operate the business as a going concern for 60 days.

The shop is now being operated as a jobbing shop, doing contract gear work with orders ahead to carry it for some time, and is accepting contracts for the immediate future. It is now operating two shifts and the records made by the Stevenson multiple gear shaper in the regular conduct of business are encouraging.

### Charles Proteus Steinmetz

At an address at the public memorial meeting for Dr. Steinmetz, Oct. 31, E. W. Rice, Jr., honorary chairman of the board, General Electric Co., closed with the following words:

"He was a prolific inventor, a skilled mathematician, a trained engineer and an inspiring teacher. Our generation has produced men who have equalled or excelled him in some one of these fields, but no one has arisen who, to such a superlative degree, combined the qualities of inventor, mathematician, engineer and teacher.

"He possessed a marvelous insight into scientific phenomena and unequalled ability to explain in simple language the most difficult and abstruse problems. Countless electrical engineers now occupying positions of great importance in our company and elsewhere in the world gladly give testimony of their debt to him.

"He was patient, sympathetic, cheerful, and ever willing to share his great gifts with all those who sought his counsel.

"He loved children and they loved him. A neighbor and his wife were mourning his loss in the presence of their children, when the father exclaimed, with deep emotion, 'and he was my friend.' His little son of seven years looked up from his play and said: 'He was my friend, too, daddy.'

"We, his fellow citizens, friends and associates, join the great world in mourning his loss, but may our grief be tempered by the memory of his great achievements which make his name the synonym of high service to humanity."



## PERSONAL

Roy H. Davis, general manager Firth-Sterling Steel Co., Pittsburgh, has returned from a trip to Sheffield, England, where he has been investigating new developments in the manufacture and application of stainless steel. J. Wortley Fawcett and Eric Holmstrom of Thos. Firth & Sons, Ltd., Sheffield, returned with Mr. Davis in the interest of the latter company's business in this country.

D. O. Williams has resigned as president and general manager of the Plymouth Stamped Metal Co., Plymouth, Ohio, and has been succeeded by George James, who has purchased his interest in the company.

J. D. W. Snowden has become affiliated with the Morse-Rogers Steel Co., Cleveland, as sales manager of a newly established copper product department. He has long been associated with the iron and steel industry in Cleveland and was for several years assistant district sales manager of the Cleveland office of the Cambria-Midvale Steel Co.

H. C. Stalnaker, for a number of years manager of the Cleveland office, Stalnaker Steel Co., Pittsburgh, has sold his interest in the company to his brothers, H. D. and J. B. Stalnaker, and has organized the H. C. Stalnaker Co., Cleveland, to deal in iron and steel scrap.

D. I. Wheeler, for the past eight years manager of the Cleveland office for the Morse Chain Co., Ithaca, N. Y., has been appointed sales engineer for the Ramsey Chain Co., Inc., Albany, N. Y., manufacturer of a compensating joint silent chain. Mr. Wheeler will make his headquarters at the main office and factory at Albany.

H. L. Unland, engineer for 13 years with the General Electric Co., 11 of which were spent in the power and mining department, leaves the company Dec. 1 to become electrical engineer with the Victor Talking Machine Co. at Camden, N. J. He is a graduate of the Engineering College of the University of Nebraska, class of 1910. Following graduation he joined the General Electric Co., taking charge of the water rate test, later becoming connected with the power and mining department. Later he specialized in electric welding and is the author of many articles on this subject.

E. M. Herr, president Westinghouse Electric & Mfg. Co., has been elected president of the Electrical Manufacturers Club, an organization composed of executives and leading officials of the electrical manufacturing companies of the country.

Frank Evans, for the past 12 years superintendent in charge of patterns and castings for the Hupp Motor Car Corporation, Detroit, has severed his connection with the company. He has not announced plans for the future.

Noah G. Spangler, general manager Jackson Iron & Steel Co., Jackson, Ohio, for the past seven years, has resigned.

Oscar E. Bulkeley, superintendent of electric and water plants for the city of Lansing, Mich., has been elected president of the Lansing Engineer's Club.

Emil Kronquist, Crystal Falls, Mich., prominent as a geologist, has joined the Ford Motor Co. in that capacity. He will be engaged in special work for the Ford company in connection with its mining interests.

George H. Robins, for four years associated with William J. Breen & Co., Boston, is now with the sales department of the New England Coal & Coke Co., Boston.

Alexander G. Black has been appointed superintendent of the open-hearth department, Vandergrift, Pa., works, American Sheet & Tin Plate Co. He comes from the Keystone Steel & Wire Co., Peoria, Ill., where he was superintendent of open-hearth furnaces for

several years. Mr. Black is a graduate of Lehigh University, class of 1912.

Louis J. Campbell, son of President James A. Campbell of the Youngstown Sheet & Tube Co., this week submitted to the amputation of his left leg below the knee. The operation was performed in New York.

Richard B. Mellon, elected to the board of directors of the Crucible Steel Co. of America at the annual meeting of stockholders, is a brother of Andrew W. Mellon, Secretary of the Treasury, and succeeded him in a number of directorships, which he relinquished upon accepting the cabinet appointment.

William Klingenhoefer, formerly with the American Foundry & Construction Co., Pittsburgh, has become associated with the Latrobe Tool Co., Latrobe, Pa., as sales manager.

E. R. Kelso, for several years connected with the Ellwood Works of the National Tube Co., and for the past year chief engineer Weldless Tube Co., Wooster, Ohio, has accepted a position with the Mackintosh-Hemphill Co., Pittsburgh.

John S. Pendleton, 52 Vanderbilt Avenue, New York, has been appointed Eastern sales agent by the Columbia Steel Co., Elyria, Ohio, manufacturer of cold-rolled strip steel. Mr. Pendleton also represents the Falcon Steel Co., Niles, Ohio; the Falcon Tin Plate Co., Canton, Ohio; the Franklin Steel Works, Franklin, Pa., and the Standard Gage Steel Co., Beaver Falls, Pa.

James A. Farrell, president United States Steel Corporation, has accepted an invitation to address the Cleveland Foreign Trade Conference to be held Dec. 12, under the auspices of the Cleveland Chamber of Commerce. Mr. Farrell is chairman of the National Foreign Trade Council.

## OBITUARY

HUGO SCHERER, who died at his home in Detroit recently, was one of the city's prominent citizens and one who played an active part in its industrial and business development of the past 40 years. Mr. Scherer was originally a manufacturer of carriage accessories and with the introduction of the motor car began to manufacture hardware and other accessories for the automotive industry. At the time of his death he was president of the Detroit Forging Co., and was a director in several large financial institutions in Detroit.

W. H. STOCKHAM, president Stockham Pipe & Fittings Co., died at his home in Birmingham, Ala., on Nov. 16, after a long illness. He was a man of wealth and was most liberal toward religious and charitable organizations. He was born at Lafayette, Ind., in 1861, was graduated from the University of Illinois in 1885 and received his training in iron and steel in the vicinity of Chicago. He is survived by his wife and three sons, two of whom are officials of the Pipe & Fittings Co.

OSCAR G. SPRINGFIELD, a partner in the firm of W. B. Arnold & Co., Waterville, Me., with which he had been associated 50 years, died on Oct. 25.

AMOS PECK MACK, president, Mack & Co., makers of edged tools, died in Rochester, N. Y., on Nov. 6, after a long illness.

M. TAYLOR PYNE, JR., president Steel Equipment Corporation, Avenel, N. J., and son of the late Moses Taylor Pyne of Princeton, N. J., died at his home, 8 East Sixty-first Street, New York, on Nov. 17, aged 39 years.

Sales of mechanical stokers in October were 88 in number and 32,576 in horsepower, as reported to the Department of Commerce by 15 establishments. This is less than half the total horsepower of the average of the nine preceding months in 1923. The maximum was in May, with 194 stokers and 100,513 hp.

## EXPORT INQUIRY ACTIVE

### Growing Interest in Machine-Tools—Manchurian Railroad Asks for Rails—Ruhr Stocks

NEW YORK, Nov. 20.—While export activity in iron and steel continues chiefly from Japan with a fair demand for second grades of material from Chinese markets, a rising interest in machine tools is evident from Japan and inquiry from Russia is also among the features of the present market. However, while most exporters to Japan are figuring on lists of machine tools, with the exception of a few lots previously reported, no large orders as yet are known to have been placed.

Although the Japanese government has purchased its first large tonnage of steel direct from the maker, there still seems to be a question as to whether or not this method will be continued. Purchases of material are being made for the Metropolitan Reconstruction Board, which is empowered to buy and sell goods, as well as to plan and supervise rebuilding in the devastated area. The purpose of this first purchase is to prevent profiteering on emergency requirements by reselling at cost to individual consumers. Details of transactions will probably be handled through the office of the commercial attache to the Japanese Embassy, 165 Broadway, New York.

### Oxygen in Copper

The effect of oxygen, up to concentration of 0.36 per cent, in the properties of pure copper, is described in a paper, "Investigation of the Effects of Impurities in Copper; Part I.—The Effect of Oxygen in Copper," by Dr. D. Hanson, C. B. Marryat and Grace W. Ford, presented at the annual fall meeting of the Institute of Metals, Manchester, England, Sept. 12, 1923. The investigation deals with the casting of the metal, cold rolling, hot rolling, density of chill-castings and rolled bars, tensile tests at ordinary and at elevated temperatures, hardness tests, fatigue tests, notched-bar impact tests, electrical conductivity, microstructure of castings, microstructures of the alloys in various conditions, and determination of the solubility of oxygen in solid copper.

The results indicate that oxygen has a relatively small effect on the properties of copper, and is neither seriously deleterious nor remarkably beneficial. The mechanical properties are not much affected by small quantities of oxygen, and copper containing as much as 0.1 per cent differs very slightly from pure copper. The electrical conductivity, which is usually profoundly affected by the addition of small quantities of an impurity to a pure metal, does not fall rapidly, and values exceeding 100 per cent of the International Standard are obtained in all annealed materials containing less than 0.1 per cent of oxygen. The relatively small effect of oxygen is without doubt due to the fact that the solubility of the oxide in solid copper is extremely low, so low in fact that for all practical purposes oxygen may be regarded as insoluble in solid copper. The oxygen-bearing metals must, therefore, be considered as a heterogeneous mixture of pure copper and finely divided particles of cuprous oxide, and within the range of composition investigated the percentage of copper greatly exceeds that of cuprous oxide. The materials consist essentially of a soft ductile copper matrix, in which harder particles of cuprous oxide are distributed, and the properties of the series are such as would be expected from such a mechanical mixture.

These conclusions, however, are applicable strictly only to pure copper containing oxygen and free from other impurities. The effect of the simultaneous presence of other impurities may be very appreciable, and requires special investigation.

Eugene W. Smith, the Crane Co., Chicago, will deliver an address before the Detroit Foundrymen's Association, Dec. 20, on the vibratory test for bond and silica in molding sand.

There is still a fair demand for light-gage black sheets from Japan, but not of the proportions of a few weeks ago, although one current inquiry is for a total of 4000 tons. Altogether about 70,000 tons of black sheets have been bought by Japan. Some interest is apparent in wire nails and there are a number of small lots of light rails current.

One rail order recently awarded to a mill in the United States was handled by the New York office of Takata & Co., and called for 9½ miles of 60-lb. sections. About the largest current inquiry for rails for the Far East is the tender of the South Manchuria Railway Co., calling for 70 miles (about 11,000 tons) of 100-lb. rails and accessories, bids opening Nov. 20.

On Nov. 27 the tender on 18,000 tons of rails recently issued by the Chilean State Railways will be opened at the main office in Chile. Brazil has inquired for 7000 tons.

Considerable uncertainty as to the ultimate method of disposal that will be adopted by the French government on the tonnage of iron and steel seized in the Ruhr seems to prevail. One rumor, which is believed to be without foundation, states that disposal will probably be handled by an organization in Duesseldorf. As far as is known there are only 350,000 tons of finished products to be offered. The 150,000 tons of scrap and the semi-finished material, it is reported, are being absorbed by the French and Belgian iron and steel industries.

### Structural Steel Sales in October

WASHINGTON, Nov. 20.—The Department of Commerce announces October sales of fabricated structural steel, based on figures received from the principal fabricators of the country. Total sales of 107,797 tons were reported by firms with a capacity of 224,060 tons per month. Shipments of firms reporting this item represented 80 per cent of capacity.

Tonnage booked each month by 177 identical firms, with a capacity of 230,675 tons per month, is shown below, together with the per cent of shop capacity represented by these bookings. For comparative purposes, the figures are also prorated to obtain an estimated total for the United States on a capacity of 250,000 tons per month.

|                 | Actual Tonnage Booked | Per Cent of Capacity | Computed Total Bookings |
|-----------------|-----------------------|----------------------|-------------------------|
| 1922            |                       |                      |                         |
| October .....   | 133,037               | 58                   | 145,000                 |
| November .....  | 112,367               | 49                   | 122,500                 |
| December .....  | 138,737               | 60                   | 150,000                 |
| 1923            |                       |                      |                         |
| January .....   | 173,294               | 75                   | 187,500                 |
| February .....  | 184,887               | 80                   | 200,000                 |
| March .....     | 220,400               | 96                   | 240,000                 |
| April .....     | 186,117               | 81                   | 202,500                 |
| May .....       | 131,875               | 57                   | 142,500                 |
| June .....      | 118,117               | 51                   | 127,500                 |
| July .....      | 117,563               | 51                   | 127,500                 |
| August .....    | 134,431*              | 59                   | 147,500                 |
| September ..... | 121,045**             | 53                   | 132,500                 |
| October .....   | 107,797***            | 48                   | 120,000                 |

\*Reported by 176 firms with a capacity of 229,475 tons.

\*\*Reported by 173 firms with a capacity of 228,425 tons.

\*\*\*Reported by 156 firms with a capacity of 224,060 tons.

The Pittsburg Boiler & Machine Co., founder and engineer, Pittsburg, Kan., has completed arrangements for the acquisition of the Salt Lake Iron & Steel Co. plant at Salt Lake City, Utah. The Salt Lake corporation was organized in 1906 with capital of \$300,000. It is the intention of the Pittsburg company to engage extensively in the manufacture of coal mining equipment and other machinery, and also in the reconditioning of locomotives, in which line the company has been engaged for several years.

Inquiry into the freight rate structure of the United States is opposed by the Interstate Commerce Commission. Announcement to this effect was made by the Commission last Wednesday in the form of letters requesting that such an inquiry be undertaken by it. Among the requests was one from J. F. Callbreath, Jr., secretary of the American Mining Congress, who asked for an enlargement of the general grain inquiry so as to embrace all basic commodities.



## BOOK REVIEWS

**Kent's Mechanical Engineers' Handbook.** By the late William Kent. Tenth edition, rewritten by a staff of editors, headed by Robert T. Kent. Pages 2247, 4½ x 7 in.; numerous line cuts. Published by John Wiley & Sons, 1923, New York. Price, flexible binding, \$6 net; leather, \$7 net.

Not only was the entire text of this book revised and largely rewritten, but so complete was the revision that only about 200 pages of the ninth edition, which was published in 1914, remained. Great advances in the mechanic arts, occurring during and since the war, have been responsible for this almost complete overturn of the previous work. The total amount of material covered in the new volume exceeds that in the old by 56 per cent.

There is a considerable amount of new information on heat and heat insulation, fuels and combustion, air compressors, condensing equipment, power transmission and electrical engineering. New material is offered in the section on machine design, as well as under the heading of railroad engineering, with special reference to locomotive design and to train resistance. Fans and blowers, hydraulic turbines, pumps and pumping engines, steam engines and steam turbines, oil engines, gas producers, hoisting and conveying equipment, refrigeration and ice-making, and heating and ventilation have been subjects of extensive alteration and practical rewriting, due to the inclusion of great amounts of new information. Gas turbines, automobiles, aeronautics, reinforced concrete, safety engineering, malleable castings, and fusion welding and cutting are among the new topics covered for the first time in this edition.

As has always been the case with "Kent," the book is preeminently based on practical considerations, with only enough of the theory to explain the practice. First-hand information has been sought wherever available and references are freely given to original sources of information. It thus becomes the work, not of the 36 men who have edited this edition, but of a much wider group with vastly more varied experience, covering subjects of almost inconceivable variety.

Now as always the book will be of great value to designing and consulting engineers in all fields of mechanical engineering. It is said to contain all the data necessary for the design of practically every commercially manufactured article, and these data are the last word in every case. A complete index covering 123 pages and 14,565 titles makes the information easily accessible; this is supplemented by more than 600 cross references scattered through the book.

**Walzen und Walzen-Kalibrieren.** By Wilhelm Tafel. Pages 303, 6 x 9 in.; illustrations 186; second edition. Published by Fr. Wilh. Ruhfus, Königshof 23, Dortmund, Germany, and obtainable from G. E. Stechert & Co., 151 West Twenty-fifth Street, New York. Price, \$1.60.

This book, the title of which proclaims it to be an introduction into the processes in rolling and the work of the roll designer, is the combined second and third edition of a book published about two years ago. The author makes no effort to show a collection of ready made roll designs. Instead he endeavors to give a clear understanding of the rolling processes and consequent considerations and calculations in the design of roll passes, based on the principles of rolling, as developed by the author and his predecessors.

In the introduction to the second edition the author states that it was his intention to create a technical work that would not complicate the simple but make the complicated appear simple and easy to understand. He refers to the fact that only a comparatively few years ago the designing of roll passes was a sort of black art, known only to the initiated, completed behind closed doors and like alchemy passed on from each designer to his successor.

There is practically no literature on the design of roll passes in the English language except a few treatises, such as by Nicholson, Cuthill, Spencer, Hirst,

etc., although a number of works on the subject have been published in German, such as P. Ritter von Tunner, Fink, Kirchberg, Dehez and some in French, as Brovot and Geuze, and several papers have been presented in various societies.

As a whole this literature, although containing valuable practical data, did not produce a system whereby the correct design of roll passes could be developed or proved by theoretical calculations. Even that excellent book: "The Making, Shaping and Treating of Steel," published by the Carnegie Steel Co. states: "The best way to explain roll design is by an example, for it is as yet an art acquired mainly by experience. While subject to natural laws, the scientific aspects of the subject have not been fully developed and the roll designer has few rules to learn."

It is probably the comparatively recent development of electrical mill drives with the consequent possibilities of controlling, measuring and recording the power consumed in rolling, which led to the endeavor to find a more scientific basis for roll pass design.

In this the author has succeeded and developed some fundamental rules for the design of roll passes, not only regarding their proper shape and size with reference to permissible reductions, but also their position in the rolls in relation to roll axes and roll diameters, etc., without going to the extreme of claiming cut and dried formulas for the different sections to be rolled.

Although previous publications by German and French authors, as noted above and the "Taschenbuch für Eisenhüttenleute" are frequently referred to in the new book, it is claimed that it did not originate in or is based on a study of that literature, but principally on actual investigations and experimental work of the author.

This new edition contains some additional matter pertaining to the rolling process in general and particularly regarding the lateral spreading of steel in rolling. The rolling of wire rods is treated extensively with a separate chapter on repeaters and formulas for the calculation of the sizes of loops.

The book by W. Tafel, who is a professor of steel works machinery and the science of rolling at the technical university of Breslau, Germany, must be considered a successful attempt at deducting comparatively simple and reliable formulas, from theoretical calculations to replace empirical formulas and rule of thumb measures previously used. Although not every rolling mill man will agree without reservations with every statement made in the book, the theories are correctly developed and sufficient actual rolling results and experiments are cited to prove them. It will, therefore, be of great help to those who understand the German technical terms, not only the roll designer, but the rolling mill engineer, and the roller himself as well, the book being written so that the man without a college education can use it to advantage.

Considering the value of a publication of this kind, which would, without doubt, fill a decided gap in the English technical literature, it is proposed to translate Professor Tafel's book into the English language.

**Welding Encyclopedia.** Third edition. Compiled and edited by W. B. Mackenzie and H. S. Card. Pages 437, 6 x 9 in.; 600 illustrations. Published by the Welding Engineer, 608 South Dearborn Street, Chicago. Price, \$5.

This volume, the first edition of which was published in 1921 and which follows the arrangement of the previous editions, is offered as a reference and instruction book on the theory and practice of the welding processes.

Definitions and discussions make up the encyclopedia section of 154 pages or more than one-third of the volume, the subject matter being arranged alphabetically. Successive sections are devoted to electric arc, resistance, oxy-acetylene, and thermit welding. Chapters are included on the welding of boilers, pipe, tanks and rail joints, and a section is devoted to the rules and regulations of Federal, State and insurance interests. A brief general explanation of the principles involved in the heat treatment of steel is given.

A new feature is a chapter on the training of operators, the course for oxy-acetylene welders being based

upon the recent report of the American Bureau of Welding. This is followed by a set of exercises and examinations. The volume carries an advertising section of 75 pages.

**Fundamentals of Welding.** By James W. Owens. Pages 659 + xii, 6 x 9 in.; 279 illustrations and 28 tables. Published by the Penton Publishing Co., Cleveland. Price, \$10.

This volume, which is a comprehensive review of gas, arc and thermit welding and offered as a text book for governmental engineering departments, colleges and technical schools, may be said to be a substantial contribution to the literature of welding. The scientific and clear presentation of the subjects treated, together with the abundance of illustration, are noteworthy.

Its author was associated from the beginning with the special research work of the Bureau of Construction and Repair of the United States Navy, conducted at the navy yard at Norfolk, and he was in charge of it for several years. He has carried out some rather extensive welding jobs, one of them being battle towing targets, and the present liberal use of welding on naval vessels is attributed to his research and investigations.

Starting with a classification of methods of welding

and the nomenclature of joints and welds, a chapter is devoted to the preparation of the joint, and the finish of a job by machining, grinding, caulking or other methods. A chapter on the gas weld includes a description and use of equipment, and succeeding chapters are devoted to the arc weld, thermit weld and gas and arc cutting. The metallography of the weld is taken up at length and illustrated with photomicrographs. The subject of residual stresses, an important problem in welding, is thoroughly discussed.

Several pages are devoted to the speed and cost of welding, and chapters are given to the choice of methods, the question of design and the subject of inspection and tests. The production and distribution of oxygen, hydrogen and acetylene are outlined and chapters are devoted to arc welding generators and transformers, welding and cutting machines, welding rods, electrodes and fluxes, protectors and safety precautions and standard specifications for welding rods.

The necessity and methods training of engineers and mechanics is emphasized and the gas welding and cutting course and arc welding course as administered at the Norfolk navy yard are outlined. Several pages are devoted to practical applications of fusion welding.

## NEW TRADE PUBLICATIONS

**Heating and Cooling Air.**—Aerofin Corporation, 750 Frelinghuysen Avenue, Newark, N. J. Twenty-eight-page pamphlet dealing with heating surfaces consisting of seamless copper or brass tubing, about which is wound a thin narrow helical extended surface of the same material soldered to the tubing. The heat transmitting surfaces thus formed are made up by assembly in tube plates and attached to headers. The surfaces thus provided may be used either for heating air through the intervention of steam or for cooling through the use of water. The pamphlet gives tables of capacities based on varying sets of conditions ranging up to a maximum of 50 lb. steam pressure.

**Duplex Cone Fans.**—Howard & Morse, 45 Fulton Street, New York. Twenty-four-page catalog of Blackman and duplex fans for ventilating and other air manipulating purposes. Dimensions and clearances are given in tabular form, together with data covering weights, pressures exerted, horsepower required, etc. The fans are made both for belt drive and for direct drive.

**Artistic Metal Work.**—Howard & Morse, 45 Fulton Street, New York. Thirty-two-page catalog devoted to metal work in iron, steel, brass, copper, bronze and monel metal. This includes elevator grills, window guards, summer houses, bank railings and cages, skylight covers, fire-escape inclosures and grill work of all descriptions. Among the smaller items covered in the catalog are wire racks or lockers, baskets, etc.

**Pulleys.**—W. A. Jones Foundry & Machine Co., 4401 West Roosevelt Road, Chicago. Forty-eight-page catalog of pulleys made of cast iron, steel, wood and paper and covering solid, split, single arm, double arm, flanged, tight and loose, step cone, taper cone, ring oiling, and ball bearing pulleys, as well as flywheels. Tables of dimensions and prices are given in considerable extent, with diagrams indicating dimensions and clearances. The flywheels covered are of cast iron.

**Lemley Friction Clutch.**—W. A. Jones Foundry & Machine Co., 4401 West Roosevelt Road, Chicago. Fifty-six-page catalog covering standard sleeve clutches, friction clutch cut-off couplings, friction clutch pulleys and gasoline engine clutch pulleys. Dimensions are given in detail, as well as list prices and specifications, including both the entire equipment and parts. The friction clutch is of the disk type, featured by simplicity, accessibility and durability, with universal adjustment.

**Underfeed Stokers.**—Westinghouse Electric & Mfg. Co., South Philadelphia, Pa. Fourteen-page catalog covering a new model of mechanical stoker which embodies positive control of the contour of the fuel bed at all rates of combustion. The agitating element is mounted across the lower end of the stoker, adjacent to the retorts, providing a means of maintaining minimum combustible losses to the refuse.

**Graphic Watt Meters.**—Esterline-Angus Co., Indian-

apolis. Four-page folder dealing with the use of graphic watt meters for controlling employment time, overcoming friction load, control of current use at night, and studying maximum electrical demand. It is pointed out that the use of these instruments will provide the records from which losses can be traced and without which the losses cannot well be abolished.

**Electro-Plating and Finishing.**—B. Mercil & Sons Plating Co., 1907 Fulton Street, Chicago. Sixteen-page folder devoted to equipment for plating with nickel, brass and copper—burnished and not burnished—for black oxidizing and for giving a chocolate finish resembling statuary bronze. The job is done mechanically, both in plating and in burnishing and finishing. All sorts of small parts can be handled, illustrations in large numbers appearing in the folder.

**Cutless Bearings and Sealing Rings.**—B. F. Goodrich Rubber Co., Akron, Ohio. 20-page catalog devoted to bearings to resist the action of gritty water, whether this comes from sand or other content in the water. The inner surface of the bearing consists of grooved rubber. Water acts as a lubricant, while the spiral groove takes care of any grit or sand which might otherwise injure the bearing surface. Tests of this bearing have been made under water and in a great variety of ways, showing that it will stand up in long service both for pump bearings and for outboard bearings on motor boats, etc.

**Laboratory Testing Apparatus.**—Howard & Morse, 1197 DeKalb Avenue, Brooklyn, N. Y. 16-page catalog devoted to laboratory appliances for industrial and professional service. Various types of apparatus are covered, made in accordance with specifications of the American Society of Civil Engineers, the Association of Portland Cement Manufacturers and American Society for Testing Materials. These include penetrometers, vicat needles, briquette molds, agitators, viscosity float, ductility machines and extractors.

**Marine Diesel Engines.**—Burmeister & Wain, Ltd., Copenhagen, Denmark. (H. C. Hallings, United States representative, 27 Whitehall Street, New York.) 16-page catalog devoted to the internal combustion engine on shipboard. Engines of this type have been applied to 112 ships of more than 2000 gross tons each, the aggregate tonnage being 649,282. Comparison is made between two ships of approximately equal size, one using coal and a steam engine while the other uses Diesel engine with fuel oil. The fuel consumption per day is given as 19 tons of coal against 4.6 tons of fuel oil. For a voyage of 5000 nautical miles the ship with Diesel engine works out a cargo capacity of 4239 tons against 2763 tons for the steamer.

**Olivite Acid Pumps.**—Oliver-Sherwood Co., San Francisco. 16-page catalog devoted to pumps for handling acids and other corrosive solutions, and designed particularly for durability—both mechanical and chemical. High mechanical and hydraulic efficiency are incorporated in the design, while the acid proofing of the pump, known as Olivite, is a substance having a rubber base with great resistance to wear and to chemical deterioration.



## New Companies

The Vactuphone Engineering Corporation 123 Liberty Street, New York, has been incorporated with \$20,000 capital stock to engage in manufacturing radio machinery and equipment. The incorporators are L. Isaacs, I. Sickie and W. Scadron. Immediate operations will not be extensive.

The Stevens-Duryea Motors Inc., New York, has taken over the business of a manufacturer of automobiles which has been in clerks' hands for two years. The new management plans to resume operations at the plant in Chicopee, Mass. R. W. Stanley, general manager, R. R. Owen and J. O. Tryon are the incorporators. H. B. Leary, 55 Broadway is representative.

The Stone-Brook-Elk Corporation, New York, has been incorporated with capital stock of \$200,000 and will manufacture automobile equipment and accessories. The company is still in the formative state. The incorporators are A. A. Beaudry and R. Steinbacher. Temporary address is care of E. M. Hawkins, 256 Broadway.

The New York Metal Store Fronts Co., 200 Lewis Street, New York, recently organized, will manufacture copper-covered moldings for store fronts. The company has equipped its plant and is now in production. A. Katz heads the company.

The Starburn Products, Inc., 600 West Forty-third Street, New York, has been organized by Kenneth Burns of Joblez Burns & Sons, manufacturers of special machinery, to manufacture metal sprays and specialties. Plans for operation have not yet been perfected.

F. A. D. Andrea, Inc., 1581 Jerome Avenue, New York, has been incorporated with capital stock of \$25,000 to manufacture radio products. Thirteen thousand sq. ft. of floor space has been rented at 1532 Inwood Avenue, and equipment is now being installed. Within a short time it is expected that 200 hands will be employed. R. M. Kline heads the company.

The Porter Engine Development, Inc., 2 Rector Street, New York, recently incorporated with \$100,000 capital stock will develop a new make of rotary valve engine. According to present plans, manufacturers will be licensed for production. F. R. Porter heads the company.

Frank H. Schubert, district manager, Wheeler Condenser & Engineering Co., and William G. Christy, secretary of the St. Louis Section, American Society of Mechanical Engineers, and formerly with the St. Louis Boat & Engineering Co., St. Louis, have organized the Schubert-Christy Construction & Machinery Co., with offices in the Railway Exchange Building, St. Louis. In addition to representing manufacturers of power plant equipment, the company will render general construction engineering service, specializing in the design and construction of water cooling equipment.

The Adams & Durkee Steel Co., Inc., Boston, has been organized with W. E. Adams as president and W. B. Durkee, treasurer. The company will take over the warehouse formerly occupied by the Arthur Balfour Steel Co., 287 Atlantic Avenue, also the stock of that company, as well as its United States agency for Arthur Balfour & Co., Ltd., Sheffield, England, with the exception of Ohio. In addition to such high speed steels and water and oil hardening tool steels, the firm will carry a complete line of domestic finished steels such as cold-rolled strip, flat wires, drill rods, music wire, spring wires and finer grades of steel in general. The company also will act as New England agent for the Thompson Wire Co., Boston, cold rolled strip steel, etc. Mr. Adams was associated with Edgar T. Ward's Sons Co., Boston 22 years, the last six as director and sales manager for New England. Mr. Durkee has been engaged in the steel business approximately 15 years, the last six conducting business under his own name at 141 Milk Street.

The Rubberstone Rubber Mfg. Co., Kansas City, Mo., has been incorporated with capital stock of \$125,000 to manufacture rubber products, having taken over the plant and business of the A. J. Stephens Rubber Co., that city, recent sold at receiver's sale. The business will be resumed along the same lines. A. J. Stephens will have charge of sales.

The Kline Spring Co., Babbett Road, Euclid, Ohio, recently organized, will manufacture wire springs and specialties, being equipped to handle coiling in all sizes up to 1/2-in. round. Present quarters are not permanent but the company will remain there for about a year. Allen B. Kline is president.

The Nulite System, Inc., 823 Land Title Building, Philadelphia, has been incorporated with capital stock of

\$2,500,000, Delaware laws, to exploit the Wilkins patent for repairing incandescent lamps. Present plans provide for opening a plant in Philadelphia, commencing Feb. 1, which will have a capacity for repairing 20,000 globes per day. The company will either rent a plant or purchase outright. No building is contemplated. H. Haskins is secretary.

The American De Gama Process & Machinery Corporation, 347 Madison Avenue, New York, organized under Delaware laws with capital stock of \$300,000, will establish manufacturing units in several centers throughout the country for briquetting turnings, specializing principally on copper and brass. Twelve machines are now being built in Europe, the first one of which will be set up somewhere in the East about Jan. 1. Factory site has not yet been determined but Jersey City, N. J., and Philadelphia seem most favorable. Numerous inquiries have been received concerning both the machines and the process. D. V. De Gama is president.

The White Pelican Iron Works, Inc., Klamath Falls, Ore., recently organized to manufacture iron and steel products, will engage in the general manufacture of plates, tanks, and structural iron works, steel stacks and burners. The shop will be equipped with 8-ft. bending rolls, punches, gears and complete locomotive repairing equipment. Ground has been purchased for a shop 48 x 150 ft. Bars, beams, pipes and tubes will be carried in stock. T. N. Monks of the Portland Boiler Works is president.

Machinery is being installed at the plant of the Westfield Grinding Wheel Co., Elm Street, Westfield, Mass. Production is scheduled to start late this month. The company recently incorporated under Massachusetts laws with capital of \$150,000. George L. Gaylord, for 27 years associated with the Vitriified Wheel Co., most of the time as president and manager, is president and treasurer of the company. William C. Doering is vice-president and Richard N. Gaylord, secretary. Mr. Doering also was with the Vitriified Wheel Co. many years, latterly as general foreman, and Richard N. Gaylord for about three years.

## Trade Changes

The J. G. Brill Co. has purchased the railroad motor Coach Division of Service Motors, Inc., Wabash, Ind. A new division of the Brill Company has been organized as the automotive car division, with C. O. Guernsey, formerly vice-president of the Service Motors, Inc., as chief engineer.

The Cadillac Machinery Co., Detroit, has been appointed exclusive sales agent for the Grand Rapids Grinding Machine division of the Gallmeyer & Livingston Co., Grand Rapids, to cover the Detroit territory, comprising the eastern half of Michigan.

The E. H. Welker Co., 222 West Larned Street, Detroit, has been appointed Detroit representative of the George Oldham & Son Co., Baltimore, manufacturer of pneumatic tools.

The Federal Machinery Sales Co., 12 North Jefferson Street, Chicago, has acquired the exclusive agency in Chicago and Milwaukee territories for the engine lathes manufactured by the Bradford Machine Tool Co., Cincinnati.

The Stocker-Rumely-Wachs Co., 117 North Jefferson Street, Chicago, has been appointed exclusive sales agent in Chicago, Milwaukee and Grand Rapids, Mich., territories for the Greaves-Klusman Tool Co., Cincinnati, manufacturer of engine lathes, effective Dec. 15. It has also obtained the exclusive sale in Chicago territory for the line of power squaring shears and heavy power presses manufactured by the D. H. Stoll Co., Buffalo.

The business of W. Stuart Miller, 435-36 Royal Exchange, Manchester, Eng., will be carried on under the style of W. Stuart Miller, Ltd. Personnel remains as before.

The Merchant & Evans Co., Philadelphia, has opened a branch warehouse in Detroit, located at the corner of Junction and Federal Avenues. Offices will be located at 403 Real Estate Exchange Building with J. C. McIlroy as manager.

General offices of the Edgar T. Ward's Sons Co. have been moved to 400 Frelinghuysen Avenue, Newark, N. J.

Title of Lippincott, Mills & Co., Inc., 17 Battery Place, New York, has been changed to William H. Mills & Co., Inc.

The Dominion Bridge Co., Ltd., has changed its address to 217 Bay Street, Toronto, Ont.

The address of The Lion Oil & Refining Co., Kansas City, Mo., has been changed to Eldorado, Ark., Box Y.

# Machinery Markets and News of the Works

## INQUIRIES MORE PLENTIFUL

### No Appreciable Increase in Machine Tool Orders, However

A Good Deal of Pending Business, It Is Believed, Will Go Over Until After First of Year

While inquiries for machine tools are more numerous, orders are not gaining appreciably, and it is a general belief that many of the pending inquiries are "feelers" that betoken possible buying after Jan. 1 rather than this year.

A fair degree of activity at Chicago and Cleveland is reported, Chicago dealers having before them more inquiries than at any time this year. The Illinois Steel

Co. is said to have closed for considerable additional equipment for its steel car wheel plant at Gary, Ind. The Remy Electric Co., Anderson, Ind., has bought five engine lathes. There is fair interest in sheet metal working machinery of various types in that section of the country.

Railroad buying is less active. The Pennsylvania Railroad has ordered a number of tools for its Columbus, Ohio, shops, and has issued inquiries for tools needed at its St. Louis and Mingo Junction shops. The New York Central has postponed until Nov. 29 the opening of bids for the 25 or more tools it inquired for two or three weeks ago.

A Cincinnati builder of tools is reported to have booked substantial orders from Russia, Brazil and Mexico. Little Japanese business has developed so far.

## New York

NEW YORK, Nov. 20.

INQUIRIES are more plentiful, but orders show no appreciable gain. Considerable business is pending, including the inquiry of the New York Central Railroad for about 25 machines, but sellers are at a loss in determining just how much buying may be expected before the end of the year. As is usual when demand for new tools is light, business in used tools is quite brisk. Large machines in particular are in good demand and there has been a ready sale for planers, boring mills, bending rolls, etc., and in fact some dealers have been seeking machines of this type that are for sale in order to satisfy inquiry already in hand. The Pennsylvania Railroad has bought a 6-ft. radial drill and the American Steel & Wire Co. has bought a 7-ft. radial drill. The McClintic-Marshall Co. ordered a 42-in. rotary planer. The Pelton Water Wheel Co., San Francisco, has ordered a 7-spindle floor borer from an Eastern builder.

Carr Brothers, Inc., 65 Broadway, New York, have issued an inquiry for type O. M. portable electrically-driven grinder with 8 x 1½ x 7/8-in. wheel, weight 132 lb., for 2-hp. motor, to run on 220-volt, three-phase, 50-cycle current. The machine is for export.

Contract has been awarded by the Continental Can Co., Inc., 61 Broadway, New York, to the Barney-Ahlers Construction Corporation, 110 West Fortieth Street, for an addition to its plant at Jersey City, N. J., estimated to cost \$500,000 with equipment. Francisco & Jacobus, 511 Fifth Avenue, New York, are architects and engineers.

The Reo Motor Car Co., 1709 Broadway, New York, is taking bids on a general contract for a four-story service and repair plant, 100 x 175 ft., on West Fifty-fifth Street, to cost about \$200,000. Parker & Shaffer, 280 Madison Avenue, are engineers.

The Pan-American Petroleum & Transport Co., 120 Broadway, New York, will commence the construction of a new oil storage and distributing plant at the United States naval base, Pearl Harbor, T. H., to cost about \$550,000. Contract has been let to the M. W. Kellogg Co., 90 West Street, for pumping machinery, compressors, motors and piping system, for \$342,000; to the United States Steel Products Co., 30 Church Street, for superstructure of building, \$96,000; and to the Armstrong Cork Co., Pittsburgh, for insulation for storage tanks, \$40,000. Other awards will soon be made.

The Industrial Machinery Division, Room 815, Bureau of Foreign and Domestic Commerce, Washington, has information of a project now being developed in the State of Parana, Brazil, covering the construction of an oil and

fertilizer plant, for which catalogs of American equipment have been requested from A. T. Haeblerle, United States Consul, Sao Paulo, Brazil. The installation will consist of an ammonia ice-manufacturing plant with capacity of 50 tons per day; ice-crusher and transporter, with maximum capacity of 50 tons in two hours; oil-extracting plant, with output of 10 tons per day; glue manufacturing plant, with capacity of one to two tons per day; can manufacturing plant, both large and small sized containers; canning and cooking equipment, including steam-jacketed cookers, vacuum canning machine, filling machinery, etc., and small cooperage plant. Catalogs and information sent to the Industrial Machinery Division will be reforwarded to the consulate office at Rio de Janeiro, Brazil.

The former foundry of the E. W. Bliss Co., Plymouth Street, Brooklyn, 100 x 137 ft., has been purchased by Kirkman & Son, 215 Water Street, for soap and kindred manufacture, and will be remodeled for an addition.

Fire, Nov. 15, destroyed a portion of the three-story plant of the George Cooper Mfg. Co., 362-64 Jefferson Street, Brooklyn, manufacturer of children's vehicles and parts, with loss estimated at \$60,000. It is planned to rebuild.

Louis Bossert & Son, 1335 Grand Street, Brooklyn, manufacturers of portable houses, etc., will make extensions in their four-story plant, 100 x 100 ft., to cost about \$25,000. Carl L. Otto, 15 Park Row, New York, is architect.

E. S. Walsh, commissioner of Canals and Waterways, Capitol Building, Albany, N. Y., has received a low bid from the McCann Building Co., Sheridan Avenue and Dove Street, Albany, for a power house at Vischers Ferry, at \$143,567, exclusive of equipment, for which bids will be asked later. A similar power station is also being built at Palmyra, N. Y., Lock 29, State Barge Canal, to cost \$100,000.

The Bureau of Supplies and Accounts, Navy Department, Washington, will take bids until Dec. 11 for 7000 ft. steel conduit pipe for the Brooklyn and Mare Island navy yards, schedule 1591.

Fire, Nov. 12, destroyed a portion of the five-story building at West Forty-fourth Street and Tenth Avenue, New York, occupied jointly by the Gramercy Brass & Iron Works, and the Iron Specialty Mfg. Co., with loss estimated at \$90,000 including equipment. It is planned to rebuild.

Work will commence on a new power plant at the works of the American Linoleum Mfg. Co., Linoleumville, Staten Island, to cost about \$100,000 including equipment.

The Radio Corporation of America, Woolworth Building, New York, through its affiliated organization, the Federal Telegraph Co. of California, San Francisco, is perfecting plans for a group of radio stations in China to cost \$13,000,000 and to be completed in 24 months. The central plant at Shanghai will be of 1,000,000 watt capacity, with seven steel towers, each 1000 ft. high, and power plant. Other stations will be at Pekin, Canton and Harbin. R. P. Schwerlin, president of the Federal company, will be in charge.



## The Crane Market

Although current business in overhead traveling cranes and locomotive cranes is slack, evidence of future activity, probably after the first of next year, continues to accumulate. There are a number of pending orders on overhead cranes, but buyers continue to delay award of the business. In addition there are projects planned or under construction that will undoubtedly result in fair inquiries for material handling equipment. The probability of future inquiry is reported to be particularly strong in the locomotive crane field, where current business is exceedingly light. Among pending inquiries in overhead cranes is one from the J. G. White Engineering Corporation, 43 Exchange Place, New York, calling for a 40-ton, 42-ft. 9½-in. span, 4-motor, overhead traveling crane for shipment to Manila, P. I. The Tottenville Copper Co., Tottenville, Staten Island, New York, has been receiving bids on a 15-ton, 72-ft. span, electric traveling crane, and Fox Brothers & Co., 126 Lafayette Street, New York, are obtaining prices on an 8-ton, 51-ft. 2-in. span, 3-motor, overhead traveling crane for shipment to Texas.

Much crane business is being figured against in the Pittsburgh district, but actual awards are few. Belief is strong that much steel company business will be placed before long, as the slowing down in steel orders will release labor for employment on necessary plant improvements. In addition to six cranes asked for by the Standard Sanitary Mfg. Co., for its new Baltimore plant, referred to a week ago, there will be one for the machine shop, bringing the total to seven. These cranes, all of 5 tons capacity, 47-ft. span, are slightly special, specifications calling for high-speed, quick-stopping and rigidity of structure. The Columbus Railway, Light & Power Co., Columbus, Ohio, is asking for three 35-ton electric traveling cranes for the new power plant that it will build near Columbus.

Among recent purchases are:

General Electric Co., Schenectady, N. Y., two 10-ton, 35-ft. span overhead traveling cranes for Schenectady, from Alfred Box & Co.

Heddon Iron Construction Co., Newark, N. J., a 5-ton, 40-ft. span, hand power crane, from the New Jersey Foundry & Machine Co., and two 3-ton and one 5-ton electric trolleys for single I-beam cranes, from the Shepard Electric Crane & Hoist Co.

Albany Pumping Station, Albany, N. Y., a 5-ton, 27-ft. span, hand power crane, from the New Jersey Foundry & Machine Co.

Federal Shipbuilding Co., Kearny, N. J., three 2-ton, single I-beam underhung hand power cranes, from the Chisholm-Moore Mfg. Co.

Michigan Central Railroad, Detroit, Mich., a 10-ton electric pillar crane, from the Whiting Corporation.

American Sheet & Tin Plate Co., a 10-ton, 70-ft. span, double trolley magnet and bucket crane for Vandergrift, Pa., from an Ohio crane builder.

Atchison, Topeka & Santa Fe Railroad, a 7½-ton electric traveling crane for the San Bernardino, Cal., shops, from the Shaw Electric Crane Co.

Northeastern Power Co., Milwaukee, Wis., a 20-ton hand power crane, from the Whiting Corporation.

Michigan Stamping Co., Detroit, Mich., a 10-ton electric traveling crane, from the Whiting Corporation.

United States Lead Co., a 5-ton, 52-ft. span electric traveling crane for its St. Paul plant from H. D. Conkey & Co.

W. T. Rawleigh Co., Freeport, Ill., a 10-ton, 38-ft. span, double girder, power house crane from H. D. Conkey & Co.

The Westinghouse Co., Weaver Street, Schenectady, N. Y., manufacturer of threshing machines and engines, has plans for a new factory at Shortsville, N. Y.

The Consolidated Gas Co., 130 East Fifteenth Street, New York, is arranging for a stock issue of \$30,000,000, a portion of the proceeds to be used for expansion in plants and distributing system, and the installation of additional steam power equipment, generating apparatus and auxiliary machinery.

The New York Central Railroad Co., New York, has tentative plans for the electrification of its system south of Spuyten Duyvil. The project will be carried out in connection with relocation of lines and elimination of grade crossings, with estimated cost of \$20,000,000. Additional generating and other power equipment will be installed.

The Electrical Equipment Division, Bureau of Foreign and Domestic Commerce, Washington, has information regarding four concessions granted for the construction and operation of electric light and power plants in the Province of Cordoba, Argentina, for which equipment will be purchased, including names of interested concerns, File No. 109537.

The Rollet Numbering Machine Co., 688-704 Jamaica Avenue, Brooklyn, has filed plans for a one-story addition to its present two-story factory.

The Waldorf Garage Co., New York, has leased the six-story and basement building at 142-56 East Thirty-first Street, and will remodel the structure for a service, machine repair and garage plant, with capacity of 700 cars.

The Independent Electric Supply Co., 59 Warren Street, New York, has leased the five-story and basement building at 52-54 Murray Street for a new plant and headquarters.

The Logan Construction Co., 15 Park Row, New York, has inquiries out for a belt-driven air compressor, four air drills for stone work, and a portable concrete mixer.

The Hawaiian Contracting Co., Honolulu, T. H., has taken a contract for the construction of a deep water port at Kaunialapau Island, Land of Lanai, T. H., to cost about \$500,000. Warehouses will be built, with the installation of cranes, loading and unloading machinery, conveying equipment, etc., for which bids will be asked at an early date.

The Little Wonder America Co., Brooklyn, has leased a portion of the building at 256 St. James Place, and will install precision machinery for the manufacture of clocks and clock mechanisms.

The plant of the Magna Metal Corporation, Doremus Avenue, Newark, has been acquired by Joseph T. Castles, 1113 Clinton Avenue, Irvington, for \$85,000, and will be converted for another line of industrial manufacture.

Electric power equipment, mechanical drying machinery,

conveying equipment and other machinery will be installed in the one-story addition to be erected at the plant of the Nairn Linoleum Co., Belgrove Drive, Kearny, N. J., 170 x 375 ft., estimated to cost \$110,000.

Fire, Nov. 13, destroyed a portion of the plant of Diffany & Co., 436 Mulberry Street, Newark, manufacturers of metal goods, with loss estimated at \$60,000. The structure was owned by the Manufacturers' Can Co. and leased to the Diffany organization. It is planned to replace the plant. Henry Diffany heads the company.

The Thermophor Mfg. Corporation, 143 Chambers Street, New York, has been incorporated with capital stock of \$100,000 to manufacture heating equipment and devices, including metal ware for domestic and general use. The latter products are made of copper and nickel and the company is desirous of getting in touch with manufacturers equipped to produce these in large quantities. H. R. Bernard heads the company.

## New England

BOSTON, Nov. 19.

THE purchase of \$40,000 to \$50,000 new equipment, largely production, by the American Bosch Magneto Corporation, North Main Street, Springfield, Mass., was the outstanding feature of the machine tool market the past week. The Saco-Lowell Shops, Boston, textile machinery, is buying some of the inexpensive equipment on its list, and the United Shoe Machinery Corporation, Beverly, Mass., planer equipment. Otherwise transactions continue few and far between, mostly in individual tools, and in some instances at price concessions or highly favorable terms to the buyer. No new inquiries exceeding three tools are reported, except from Western sources. In most cases these concern used equipment and are on an exchange basis.

The Marsden Steel Co., New Haven, Conn., recently organized with a capital of \$100,000, will take over and expand the plant and business of the Marsden Co., 207 Orange Street, heretofore conducted as a partnership. It will specialize in the manufacture of iron and steel products for building construction, and expects to open branch offices in other cities. William R. Marsden is president and manager; C. E. Smith, vice-president and sales manager; and William E. Prindle, secretary and treasurer.

J. H. Sutherland & Co., Washington Street, Lynn, Mass., manufacturers of pattern-making machines, will increase the capacity of their works with the installation of additional equipment.

The Whitin Machine Works, Whitinsville, Mass., has acquired the property of the Whitinsville Cotton Mills, on a 400-acre tract and will take possession April 1. The structures will be remodeled for the manufacture of machinery and parts, and additional equipment installed.

The United Illuminating Co., Bridgeport, Conn., has engaged Westcott & Mapes, Inc., New Haven, Conn., engineer, to prepare plans for a new unit at its generating plant. It will consist of a steam power department, electric turbine room and switching department, doubling the present output, and will cost approximately \$400,000 with machinery.

L. S. Crosby, 61 Dent Street, West Roxbury, Boston, operating a machine shop, plans the installation of a power hammer.

The Crown Mfg. Co., Providence, R. I., recently organized, will operate a plant at 37 Weybosset Street, for the manufacture of plated metal specialties, including jewelry novelties, etc. Morris L. Goldstein heads the company.

The Thomas Plow Co., Brunswick, Me., manufacturer of tractor-plows and other equipment, is planning for enlargements and the installation of additional equipment in machine shop and ironworking and woodworking departments.

The Columbia Cornice & Skylight Co., 268 Elm Street, Cambridge, Mass., has filed plans for a new one-story plant.

The Putnam Foundry Co., Putnam, Conn., has commenced the erection of a new one-story addition, 100 x 160 ft.

The Fuller & Thurber Co., 414 Albany Street, Boston, operating a woodworking plant, is planning for the installation of shafting, pulleys and other transmission equipment.

The Worthington Pump & Machinery Co., 265 Third Street, Cambridge, Mass., has awarded a general contract to the Canter Construction Co., Boston, for a one-story addition at its local plant, for which foundations will be laid at once.

The E. A. Eddy Machinery Co., Providence, R. I., is in the market for the following power presses: No. 404-A double-crank Bliss toggle press, No. 17 Toledo deep gap punching press, No. 6-A and 6½ Toledo open-back power presses.

## Philadelphia

PHILADELPHIA, NOV. 19.

**C**ONTRACT has been let by the Philadelphia & Reading Railroad Co., Philadelphia, to the Guarantee Construction Co., 140 Cedar Street, New York, for coal and ash bunkers, and handling equipment at its new power house, now in course of erection at Port Richmond, at a price of \$35,000. Other contracts for machinery will be awarded soon. The company will double the capacity of its ore-handling plant at this point and has work in progress on a new coal-dumping plant to cost approximately \$1,500,000 with machinery. It will be steam and electrically-operated, with capacity for handling 40 cars an hour; the different units will consist of dumping machine, power house, mechanical trimming plant, thawing house, car and boat haulage machines.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until Dec. 4, for two upright drills for the Philadelphia and Boston navy yards, respectively, schedule 1582.

The Gulf Refining Co., Widener Building, Philadelphia, has plans for a new five-story oil storage and distributing plant on the Schuylkill River, near Penrose Avenue, estimated to cost \$300,000 with equipment.

Fire, Nov. 13, destroyed a portion of the plant of the Cho-kr Mfg. Co., 3420 Market Street, Philadelphia, manufacturer of toys, etc., with loss estimated at \$75,000, including equipment. It is planned to rebuild.

The Baldwin Locomotive Works, Broad and Spring Garden Streets, Philadelphia, is perfecting plans for the removal of its engine tender shop to the plant at Eddystone, Pa., where the department will be considerably increased. The other shops and mechanical departments will be retained at Philadelphia. The new Eddystone shop will cost \$600,000.

The Philadelphia & Reading Railroad Co., Reading Terminal, Philadelphia, will commence the construction of a new power house at Cumberland Street and the Delaware River, to cost about \$50,000.

The Consumers' Ice Co., 25 Fair Street, Trenton, N. J., will build a new branch ice-manufacturing plant at Morrisville, Pa. The machinery will be arranged for oil fuel operation. A storage plant with capacity of 2000 tons will

also be built. The new works will cost \$100,000 including equipment. D. Clinton Cook is head.

Two of the mechanical drying departments at the plant of the Certain-Teed Products Co., East State Street, Trenton, were destroyed by fire Nov. 15, with loss, unestimated, including equipment. It is planned to rebuild.

Manual training departments will be installed in the new two and three-story high school to be erected at Greensburg, Pa., estimated to cost \$250,000, for which bids are being received on a general contract until Nov. 26. Maurice E. Kressley & Co., 10 North Fourth Street, Harrisburg, Pa., are architects.

The Pennsylvania Wire & Steel Co., Stroudsburg, Pa., is planning for the removal of its Buffalo plant to this location, and will provide facilities for additional equipment. The local works were recently established.

The Pennsylvania Power & Light Co., Allentown, Pa., will commence the construction of a new power house at Bethlehem, Pa.

The American Nickeloid Co., Peru, Ind., manufacturer of plated ware, has awarded contract to the Austin Co., Philadelphia, for a new branch plant at Walnutport, Pa., 70 x 100 ft., estimated to cost \$25,000.

The Standard Heater Co., Williamsport, Pa., has contracted with the Lycoming Motors Corporation, with local foundry and plant, for its entire supply of stove and heater castings. The Lycoming company will devote a portion of its plant to this work and has preliminary plans for expansion.

Frank M. Waring, Tyrone, Pa., and associates, are perfecting plans for a hydroelectric generating plant on the Susquehanna River, near Clarks Ferry, vicinity of Duncannon, Pa., to cost \$300,000 with transmission system.

Manual training equipment will be installed in the new high school to be erected at Easton, Pa., estimated to cost \$900,000, for which bids will be asked on a general contract before the end of the month. W. M. Michler, Drake Building, is architect.

M. S. Kemmerer & Co., Sandy Run, Pa., will build a new mechanical coal washery at its anthracite properties. Electric power and other equipment will be installed.

## Baltimore

BALTIMORE, NOV. 19.

**W**ORK will start in the near future on the first unit of the Baltimore plant of the Standard Sanitary Mfg. Co., Pittsburgh, at Fifth Avenue and Seventeenth Street, where a 48-acre tract has been acquired. The buildings will comprise 350,000 sq. ft. of floor space and will include a 171 x 350 ft. warehouse; 154 x 345 ft. enamel shop; 102 x 197 ft. cleaning house; 97 x 589 ft. foundry; 100 x 250 ft. machine shop; 107 x 132 ft. power house, and 110 x 120 ft. enamel powder mill. The cost is estimated at about \$3,000,000.

The Rennous-Klein Division of the Pittsburgh Plate Glass Co., 3221 Frederick Avenue, Baltimore, will build a four-story brick and steel addition, comprising about 50,000 sq. ft. of floor space, at a cost of \$200,000.

The American Cellulose & Chemical Mfg. Co., Ltd., 15 East Twenty-sixth Street, New York, is perfecting plans for a new unit at its plant at Amelle, Md., to cost \$500,000 with equipment. The installation will include condensers, filter presses, refrigerating machinery, tanks and containers, electric power and pumping apparatus, blenders, mixing machines, etc. A. J. Fitch is general manager.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until Dec. 11, for a quantity of hacksaw blades for Eastern and Western yards, schedule 1578; for 5955 machinists' hammers, for the Norfolk, San Diego, Mare Island and Puget Sound navy yards, schedule 1580; until Dec. 4, for 4730 pliers for the Portsmouth, Philadelphia, Brooklyn, Hampton Roads and other navy yards, schedule 1570, and until Dec. 11, for 404 carbon steel reamers, for the Norfolk, Mare Island and Puget Sound navy yards, schedule 1577.

The City Council, Savannah, Ga., is considering plans for the construction of a municipal electric light and power plant estimated to cost \$1,500,000, including transmission system. Lawrence Manning is engineer.

The Bedford Hardwood Co., Bedford, Va., recently organized, has commenced the erection of a new plant. Inquiries will soon be made for equipment, including lathes, saws and other woodworking machinery, and electrical equipment. W. R. Dooley is president, and J. M. Stephens, secretary and treasurer.

E. P. Lindsay, 312 King Street, Portsmouth, Va., contractor, is in the market for a rock crusher machine, second-hand, in good condition, also a steam shovel.



The Hawkins Hardware Co., Harrisonburg, Va., has acquired the local plant and business of the Valley Hardware Co., and will take possession on Jan. 1. The new owner will consolidate the properties and occupy the four-story building of the Valley company. Extensions and the installation of additional equipment are planned.

R. H. Deaderick, Winston-Salem, N. C., has inquiries out for machinery for talc mining and grinding, including electric power equipment.

Manual training equipment will be installed in the new two-story junior high school to be erected at Durham, N. C., estimated to cost \$200,000, for which bids are being asked on a general contract until Dec. 15. Milburn, Heister & Co., Durham, are architects.

The City Council, Durham, N. C., is arranging an appropriation of \$1,500,000 for its hydroelectric generating plant on the Flat River, for municipal light and power service. W. M. Pratt is engineer. R. W. Rigsbee is city manager.

The Bureau of Foreign and Domestic Commerce, Washington, has information of a company at Barcelona, Spain, in the market for American stone-crushing machinery, concrete mixers and concrete chuting plants, No. 8113; also of a concern at Puerto Arenas, Chile, desiring to purchase machinery for the manufacture of hairpins and kindred metal goods, No. 8115.

The Ice Delivery Co., Norfolk, Va., is considering plans for five new ice and refrigerating plants in different sections of the city, with storage and distributing facilities, estimated to cost \$250,000, with equipment. J. C. Prince is chairman of the board of directors.

The American Glass Works, Inc., West Broad and Meadow Streets, Richmond, Va., has inquiries out for a 100 hp. oil-operated engine and auxiliary equipment.

Bids will be received by the Purchase and Issue Subdivision, United States Veterans' Bureau, Washington, until Nov. 27, for miscellaneous equipment, including drills, hammers, mandrels, mallets and other tools; wheel buffs, grinding wheels, files, etc., circular VR-44.

Manual training equipment will be installed in the new high school to be erected at Raleigh, N. C., estimated to cost \$300,000, for which bids will soon be asked on a general contract. C. Gordon Sayre, Raleigh and Anderson, S. C., is architect.

The Lyk Glass Corporation, Baltimore, has acquired the former plant of the Drop Forge Mfg. Co., in the Carroll Park section, for the establishment of a new plant. It is proposed to remodel the structure and install electric power and other equipment.

Electric pumping machinery will be installed by the Board of City Commissioners, North Wilkesboro, N. C., in connection with extensions and improvements in the municipal waterworks, for which a bond issue of \$85,000, has been voted.

The Davis-Zirkle Lumber Co., Zirkle, Ga., has inquiries out for a 50-ton industrial locomotive.

The Wilmington Wood Products Co., Wilmington, N. C., is perfecting plans for a new factory in the Love Grove section, to cost about \$80,000 including electric power and other machinery.

Manual training equipment will be installed in a number of the new schools to be erected at Baltimore, Md., by the Board of Education, for which an appropriation of \$5,000,000 to \$6,000,000 is available. A total of eleven structures will be built and architects will be selected at once to prepare plans. The board will receive bids at the office of the city register, City Hall, until Nov. 28 for equipment, tools and supplies for present schools, as per specifications on file at the office of John H. Roche, secretary, to be addressed to the Board of Awards, City Hall.

The Wilson-Hock Co., City Point, Va., machinery dealer, has inquiries out for one upright boiler, about 44 x 102 in., with 20 ft. stack; also for a 5 to 6 ft. band saw mill, without carriage.

The Elk River Clay Products Co., North East, Md., recently organized with a capital of \$210,000, has acquired about 90 acres and will soon commence the erection of a new plant. It will include a power house and machine shop and is estimated to cost \$80,000.

The Baltimore Tube Co., Inc., Baltimore, in inquiring for a roll grinder to handle chilled rolls from 12- to 24-in. in diameter. Also a roughing mill for brass and copper works, either new or second hand, complete with shoe plates and pinion, for rolls 22- x 36-in.

The New Bern Machine Shop & Foundry Co., New Bern, N. C., recently organized, has taken over the plant of the New Bern Iron Works & Supply Co., that city, and will operate a machine shop and foundry. Structural steel, shafting, flats and rounds, will be required. E. H. Williams is manager.

## Pittsburgh

PITTSBURGH, Nov. 19.

THE Westinghouse Electric & Mfg. Co. is placing orders against its quarterly list. Besides a number of smaller tools, it has closed for two Bullard boring mills, a Pels punch and shear and a Becker milling machine. This constitutes the chief activity of the past week, although there has been a fair business from dealers' stocks. Agents and representatives of machine tool builders generally have found the past week quiet, but look upon this condition as merely seasonal and believe that with the completion of inventories more buying will develop.

Plans have been prepared for the erection of a one-story addition, 42 x 90 ft., at the plant of the Reznor Mfg. Co., Mercer, Pa., manufacturer of gas stoves, etc., to cost \$30,000 with equipment.

The Advance Welding Co., Coraopolis, Pa., is planning the installation of additional welding and other equipment at its plant.

Electric pumping machinery, filters, steel stand pipe and other equipment will be installed by the City Council, McKeesport, Pa., in connection with proposed extensions in the municipal waterworks, for which bonds of \$233,000 have been authorized. It is expected to take bids and award contracts before the close of the year.

The Pittsburgh & Lake Erie Railroad Co., Pittsburgh, is planning to rebuild the power house at its shops at McKees Rocks, partially destroyed by fire Nov. 13, with loss approximating \$25,000 including equipment.

The Hale Coal Co., Houtzdale, Pa., is planning the installation of hoisting equipment and other machinery.

The American Die & Forge Co., Swissvale, Pa., has acquired the local plant of the Benner Tool Co., manufacturer of axes and edge tools, and will occupy the property for new works. It was secured for \$137,000.

The Tidewater Coal & Coke Co., Vivian, W. Va., is planning the construction of a new steel tippie to replace a structure recently destroyed by fire. It will be equipped for a daily capacity of about 900 tons.

The Catholic School Board, Wheeling, W. Va., has engaged F. F. Faris, 1117 Chapline Street, architect, to prepare plans for a two-story and basement manual training school, 100 x 170 ft., at Elm Grove, estimated to cost \$175,000, to replace a structure recently destroyed by fire.

The Keister Milling Co., Huntington, W. Va., has tentative plans under advisement for the installation of a cold storage plant. W. D. Keister is president and general manager.

The West Virginia Coal & Coke Co., Norton, W. Va., is planning the construction of a new steel tippie at Junior, W. Va., to replace a structure recently destroyed by fire. Additional machinery will be installed.

The La Go Coal Co., Iaeger, W. Va., recently organized with a capital of \$100,000, is planning the installation of electric power and other machinery in the Tug River fields. T. B. and Carmie B. Lane, both of Iaeger, head the company.

The West Virginia Power Co., Charleston, W. Va., a subsidiary of the Virginian Power Co., same address, has preliminary plans for a new hydroelectric generating station in the valley of the New River, near the mouth of the Bluestone River, estimated to cost \$500,000 with transmission system. In connection with its proposed generating plant at the mouth of Cabin Creek, the Virginian Power Co., will install a steam power station, with capacity of 1700 hp. boilers and auxiliary equipment, to be extended during 1924 with additional machinery to cost approximately \$500,000.

The Holly Elk Coal Co., Clarksburg, W. Va., recently formed with a capital of \$350,000, will install a complete mining plant on 1500 acres on the Elk River, near Centralia, W. Va., with electric power, hoisting and other equipment estimated to cost \$100,000. A. C. McIntyre is president and George W. Lynch, treasurer, both of Clarksburg.

The Erie Steam Shovel Co., Erie, Pa., has plans for a one-story addition to cost \$45,000, including equipment. The Osborn Engineering Co., 7016 Euclid Avenue, Cleveland, is architect and engineer.

Electric pumping machinery will be installed by the City Council, Charlottesville, W. Va., in connection with extensions and improvements in the municipal waterworks, for which bonds for \$500,000 have been voted. B. A. Bennett is city engineer.

The A. M. Byers Co., 235 Water Street, Pittsburgh, manufacturer of wrought iron pipe, etc., has work in progress on a new pipe mill which will be ready for service at an early date.

The Carrier Chemical Co., Dunbar, W. Va., recently organized, will commence the erection of a new plant on a local tract of 7½ acres of land, lately purchased, with electric power and other machinery installation estimated to cost \$65,000. M. T. Davis, Jr., is president, and C. F. Carrier, vice-president and general manager.

The Pure Oil Co., Pure Oil Building, Columbus, Ohio, has tentative plans for rebuilding the portion of its plant in the Cabin Creek section, near Charleston, W. Va., recently destroyed by fire with loss estimated at \$100,000, including equipment.

The Cap Smokeless Coal Co., Charleston, W. Va., recently organized, is planning for extensions in the plant of the New River Coal Mining Co., lately acquired, including the installation of electric power and other machinery.

The Pennsylvania Engineering Works, New Castle, Pa., is inquiring for a multiple punch of 12-in. throat depth, with approximately 120 in. between housings and of design similar to Long & Allstatter No. D.

## Chicago

CHICAGO, Nov. 19.

**M**ACHINE tool inquiries from industrial sources are more numerous than at any time this year. While the volume of pending business is encouraging, the actual placing of orders will be deferred in many instances until after the first of next year. The Pullman Co., Chicago, which has just placed an order for a forging machine, is not expected to take immediate action on the remainder of its list, which includes a 30 x 30-in. x 12-ft., and two 36 x 36-in. x 12-ft. planers, five shapers and a number of other items. The A. O. Smith Corporation, Milwaukee, has placed an order for a 48-in. duplex milling machine, but purchases against its list published in this column a week ago, may not be made for some weeks.

Notwithstanding the general propensity to postpone buying as the inventory period approaches, some good-sized orders are being placed. The Illinois Steel Co. is understood to have closed for considerable additional equipment for its steel car wheel plant at Gary, including three special car wheel boring machines and three special wheel turning machines. The Remy Electric Co., Anderson, Ind., has ordered five engine lathes. There is a great deal of inquiry for sheet metal machinery, including punches and shears, power presses, power brakes and squaring shears, and scattered orders for single machines are being placed every week.

Current inquiries from the railroads are principally for one or two machines. The Illinois Central has issued inquiries for a slotter and a 24-in. x 10-ft. engine lathe. The Santa Fe is in the market for an automatic self-feed knife grinder, length 36 in., American No. 1131, or equivalent. The Chicago & North Western is inquiring for a portable crank pin truing machine, capacity 10 x 18 in. The Minnesota Steel Co. has taken figures on a No. 2 universal Cincinnati, or equivalent, milling machine.

The Whiting Corporation, Harvey, Ill., has taken the following orders for foundry equipment: No. 1 cupola for the Insulating Products Co., Chicago, and four coke-fired brass furnaces for the Koehler & Latimer Co., Philadelphia.

The Meyercord Co., Inc., 133 West Washington Street, Chicago, manufacturer of decalcomania transfers and advertising signs, has awarded a general contract to Fred G. Bear, 19 South LaSalle Street, for a three-story reinforced concrete factory, 100 x 154 ft., at 5339 West Lake Street, to cost \$200,000.

J. Wallace & Co., 1401 West Jackson Boulevard, Chicago, manufacturers of machinery have awarded contracts for a one-story saw-tooth factory, 112 x 150 ft., at West Adams Street and California Avenue, to cost \$60,000.

The Goodman Mfg. Co., 4834 South Halsted Street, Chicago, manufacturer of mining machinery, has awarded a general contract to Jacob Rodatz, 209 South LaSalle Street,

for a one-story mill construction factory, 60 x 140 ft., at 722-28 West Fiftieth Street, to cost \$17,000.

The C. Stecher Co., 2301 North Knox Avenue, Chicago, has awarded contracts for a one-story machine shop, 72 x 104 ft., at 2452-58 Greenview Avenue, to cost \$25,000.

The Radium Dial Co., which leased space in the former high school building at Ottawa, Ill., about a year ago, has purchased the structure and is remodeling it at a cost of between \$15,000 and \$25,000. The entire building will be used by the company.

The Asbestos Products Co., 2100 Fullerton Avenue, Chicago, is erecting a two-story addition, 50 x 150 ft., at a cost of \$75,000. The building will be of mill construction with sprinkler system. Plans were prepared by Frank D. Chase, Inc., engineer and architect, Chicago.

The Iowa Light, Heat & Power Co., Rockwell City, Iowa, is planning the construction of a new electric power plant to replace its local station recently destroyed by fire.

The Common Council, Trenton, Ill., is planning the installation of electric pumping machinery at its new waterworks plant, for which plans are being prepared by W. A. Fuller & Co., 1917 Railway Exchange Building, St. Louis, engineers.

The Northern States Power Co., Minneapolis, Minn., has plans for a new four-story power house at 1075 First Avenue estimated to cost \$90,000, including a portion of the equipment.

The Gustafson & Scott Mfg. Co., 4325 Wabansia Avenue, Chicago, manufacturer of cutlery, etc., will take bids for a new one-story plant on Lowell Avenue, 125 x 125 ft., estimated to cost \$65,000. C. E. Frazier, 30 North Dearborn Street, is architect.

The Common Council, Columbia, Ill., is planning for the installation of electric pumping machinery at the new municipal waterworks, estimated to cost \$50,000, for which plans are being prepared by W. A. Fuller & Co., Railway Exchange Building, St. Louis, engineers.

## Buffalo

BUFFALO, Nov. 19.

**W**ORK has commenced on an addition to the plant of the United States Gypsum Co., Oakfield, N. Y., 44 x 600 ft., for the manufacture of gypsum wall board and kindred products, estimated to cost \$85,000 with machinery. Headquarters are at 205 West Monroe Street, Chicago.

The Diefendorf Gear Corporation, 324 Pearl Street, Syracuse, N. Y., is planning for enlargements and the installation of additional equipment. W. H. Diefendorf is head.

Electric pumping machinery will be installed by the Board of Public Utilities, Jamestown, N. Y., in connection with extensions and improvements in the municipal waterworks, for which bonds for \$280,000 have been voted.

The Elba Cold Storage Co., care of C. K. Porter & Sons, 73 West Eagle Street, Buffalo, architects, will take bids at once for a two-story ice and cold storage plant, 100 x 140 ft., at Elba, N. Y., to cost \$120,000 including machinery.

Electric pumping machinery will be installed in the addition to be built to the municipal waterworks by the City Council, Fredonia, N. Y., estimated to cost \$200,000.

The Hull Steel Foundry Co., Ltd., Hull, Que., has plans for a branch works at Ogdensburg, N. Y., 100 x 600 ft., consisting of foundry, machine shop, pattern shop and other departments, to cost \$500,000 with machinery. A. H. Coplan is president.

The Dunkirk Axe & Tool Co., Dunkirk, N. Y., recently organized with a capital of \$100,000, will take over and expand the local plant and business of the Romer Axe & Tool Co., Lion Street. It is proposed to install additional equipment at an early date. J. C. and M. E. Romer head the new company.

The Watertown Radio Service Co., 112 Park Street, Watertown, N. Y., is planning for the installation of equipment to manufacture wireless apparatus and electrical specialties.

The Borgenson Tool Co., Grape and Water Streets, Syracuse, N. Y., is planning for the installation of a number of machine tools and other equipment, including cutting tools.

The Hood Foundry, Front Street, Corning, N. Y., is planning to rebuild the portion of its plant destroyed by fire Nov. 5, including machine shop and foundry. Additional equipment will be installed. A. G. Hood is head.

The Batavia Iron Works, Inc., Batavia, N. Y., has been formed under State laws with capital of 3000 shares of stock, no par value, to take over and operate the former plant of the Batavia Car Works. It will be arranged for general iron working, locomotive repairs, etc. J. E. Fer-



guson and F. W. Allen, officials of the Ferguson-Allen Co., Buffalo, with similar works, head the new organization.

The Vetter Optical Co., Inc., Buffalo, is planning for the installation of machinery for lens manufacture on a floor of the building at 1271 East Ferry Street, including precision grinding equipment, etc. F. J. Vetter is head.

## Milwaukee

MILWAUKEE, Nov. 19.

**H**ESITANCY in machine-tool buying is becoming more pronounced, and while inquiry is moderately active, most prospective buyers are taking estimates under consideration for a longer time than usual. A slackening in orders from foundries and machine shops probably is accountable for this condition. The letdown in new business is not general, however. Most shops have enough business to operate at capacity until inventory time, but will not carry over much unfilled business into the new year unless there is better buying between now and Jan. 1.

The Chicago, Milwaukee & St. Paul Railway Co. on Nov. 15 laid off 2500 craftsmen in its West Milwaukee locomotive and car shops, explaining that it finally has caught up with demand for new freight cars. About 50 per cent of normal force is retained for repair work. The shutdown is general throughout the Milwaukee system, similar reductions in forces having been made at Green Bay, Wis., Minneapolis, Dubuque, Miles City, Deer Lodge, Tacoma and Austin.

The Rhinelander Boat Works, Rhinelander, Wis., has incorporated the Rhinelander Boat Co. with a capital stock of \$50,000. It will erect an addition to double its capacity and besides building hunters' skiffs and pleasure craft intends to enter the power boat field and will also make a line of sportsmen's wood and metal specialties. William Cleveland is president and general manager.

The Service Auto Co., Ford dealer at Clintonville, Wis., contemplates the erection of a \$50,000 sales and service building, 50 x 120 ft., part three stories and basement. Foundations will be laid during the winter. A. O. Haase is principal owner of the business.

The Advertisers Mfg. Co., Ripon, Wis., manufacturer of metal advertising signs, posts, etc., is purchasing some additional equipment, having arranged to enlarge its floor space by 5000 ft.

The village of Athens, Wis., Marathon County, has engaged W. G. Kirchhoffer, consulting engineer, 22 North Carroll Street, Madison, Wis., to design a complete municipal waterworks and sewerage system, to cost from \$85,000 to \$100,000. Plans will be ready for approval about Jan. 1, and bids will be taken about March 1. John Chefak is village clerk.

The Sunbeam Co., Milwaukee, has been incorporated with an initial capitalization of \$10,000 to manufacture automobile accessories, equipment and hardware specialties. The incorporators are Frank C. Lewis, William M. Baumheckel and Kennedy L. Laffer, 535 Summit Avenue, Milwaukee.

Bartelson & Ness, Minot, S. D., are low bidders at \$227,800 and \$228,800, respectively, for two junior high and vocational schools at Appleton, Wis., designed by Perkins, Fellows & Hamilton, 814 Tower Court, Chicago. Aggregate low bids exceed the appropriation by \$80,000, but it is planned to proceed with the work. Paul V. Cary, 803 College Avenue, is chairman of the building committee.

The Cream City Granite & Marble Works, 421-431 North Avenue, Milwaukee, has awarded contracts for an addition costing about \$40,000, with additional grinding and polishing machinery, saws, hoists and cranes and motors.

The Steel Products Corporation, Sheboygan, Wis., has filed articles of incorporation. The capital stock is \$100,000 and the incorporators are Fred Zschetzsche, A. L. Stuedeman and W. B. Collins, attorney, all of Sheboygan. Plans have not been revealed but are said to contemplate taking over a local foundry and machine shop for development.

The Wausau Parts Mfg. Co., Wausau, Wis., has been organized with \$50,000 capital stock by W. C. Landon, W. F. Schofield and Karl Mathis, leading business men of the city, and will establish a plan to manufacture automotive parts, units and specialties, metal goods and kindred products.

The Oshkosh Mfg. Co., Oshkosh, Wis., is in the market for a punch and shear, capacity up to  $\frac{1}{2}$  x 2-in. mild steel, punching capacity,  $\frac{1}{2}$  x  $\frac{3}{4}$ -in.

## Central South

St. Louis, Nov. 19.

**C**ONTRACT has been let to the Gamble Construction Co., 620 Chestnut Street, St. Louis, by the Green Foundry Co., 3003 North Broadway, for a new one and two-story foundry on Kingshighway Boulevard, estimated to cost \$100,000, including equipment.

The Choctaw Portland Cement Co., Hartshorne, Okla., has tentative plans for a new works in the vicinity of Tulsa, Okla., to cost more than \$200,000. It is purposed to remove the present mill to the new location and install additional equipment.

The Edgar Lumber Co., Wesson, near El Dorado, Ark., has preliminary plans for rebuilding the portion of its mill and power house destroyed by fire Nov. 9, with loss estimated at \$150,000 including equipment.

The Standard Sanitary Mfg. Co., Bessemer Building, Pittsburgh, has awarded contract to the J. F. Russell Co., M. E. Taylor Building, Louisville, for a five-story addition to its local plant at Sixth and Shipp Streets, to cost about \$45,000. D. X. Murphy & Brother, Louisville Trust Building, are architects.

The Plough Chemical Co., Memphis, Tenn., has tentative plans for a new fertilizer works, including laboratory, machine shop, box factory and other departments, to cost about \$400,000 with machinery. The project will mature early in January. Abraham Plough is president.

The Bartlesville Gas & Electric Co., Bartlesville, Okla., is disposing of a bond issue of \$246,000, a portion of the proceeds to be used for extensions.

The Moore Brothers Electric Co., 215 West Douglas Street, Wichita, Kan., is planning for the installation of a lathe and other equipment.

The Warren Steel Casting Co., 3400 Maury Avenue, St. Louis, is having revised plans drawn for a new one-story foundry 60 x 200 ft., to cost \$75,000. Oliver J. Popp, Odd Fellows Building, is architect. C. E. Hayden is president.

The Carroll County Utility Co., Eureka Springs, Ark., is completing negotiations for the purchase of the plant of the Harrison Electric Co., Harrison, Ark. It is proposed to build an addition and make improvements in the present station to cost about \$160,000, with equipment. P. G. Walker is general manager.

The Baker Car Co., Lexington, Ky., recently formed to manufacture industrial cars and trucks, has awarded a general contract to the Blaw-Knox Co., Pittsburgh, for a one-story plant, 60 x 320 ft., with adjoining one-story structure, 26 x 30 ft. W. G. Baker is general manager.

The Common Council, Kansas City, Kan., is arranging a bond issue for extensions and improvements in the city electric plant, as follows: Additional 12,000 kva. turbo-generator, and auxiliary machinery, \$375,000; 600 hp. boiler units, with miscellaneous apparatus, \$150,000; additional transmission lines \$200,000.

A special election has been called at Hannibal, Mo., Nov. 20, to approve a bond issue of \$400,000 for extensions and improvements in the municipal waterworks, to include the installation of additional pumping machinery, motors and auxiliary equipment. D. H. Henry, 304 South Dearborn Street, Chicago, is engineer.

The Porter Provision Co., Bowling Green, Ky., is arranging for the installation of a cold storage plant in connection with a new packing factory, estimated to cost \$50,000.

Frank L. Knox, Harrison, Ark., has tentative plans for the establishment of a local plant to manufacture turned wood products. Inquiries will be made at once for wood-working, electric power and other equipment, including several tools.

Manual training equipment will be installed in the new school to be constructed at Albany, Mo., to cost about \$100,000. H. D. Pampel, Finance Building, Kansas City, Mo., is architect.

The St. Joseph Railway, Light & Power Co., St. Joseph, Mo., has preliminary plans for a new electric generating plant, to cost about \$2,000,000 with machinery and transmission system. Surveys are being made for a power site.

R. N. Allen, care of the John E. Brown College, Siloam Springs, Ark., has inquiries out for power plant equipment, including two steam-turbo generators, 50 and 75 hp., and auxiliary equipment.

The Tennessee Electric Power Co., Chattanooga, Tenn., is disposing of a bond issue of \$1,000,000, a portion of the proceeds to be used for extensions and improvements in power plants, and for the acquisition of additional properties.

The Common Council, Canton, Okla., is planning the installation of electrically operated pumping machinery at the

proposed municipal waterworks, for which a bond issue has been approved. V. V. Long & Co., 1300 Colcord Building, Oklahoma City, Okla., are engineers.

The Common Council, Watertown, Tenn., is planning for the installation of electrically operated pumping machinery at the proposed municipal waterworks, estimated to cost \$50,000.

The Barking Coal Co., Barking, near Delma, Ky., recently organized, is considering the installation of electric power and other equipment at its local properties. J. D. Wheeler heads the company.

The Non-Acid Fertilizer Co., Gordonsburg, Tenn., recently organized with a capital of \$400,000, is planning the construction of a new plant on local phosphate rock properties, to cost about \$100,000, including equipment. John W. Fry is president, and J. C. Lowman, secretary.

The R. M. Kelly, Jr., Co., dealer in iron and steel products, Urban Building, Louisville, Ky., is inquiring for a belt-driven power bending brake to bend 3-16-in. steel plates 10 ft. long.

## Cincinnati

CINCINNATI, NOV. 19.

**I**NQUIRIES are more numerous and sales, in some lines at least, are improving. It is reported that a local manufacturer has booked substantial orders for machine tools for export to Russia, Brazil and Mexico. Little Japanese business is offering as yet, and action has not been taken on the Chinese inquiry mentioned last week.

The New York Central has postponed until Nov. 29 opening of bids on the large list recently issued. The Pennsylvania Railroad, in addition to buying a number of tools for its Columbus shops, has issued inquiries for its St. Louis and Mingo Junction plants. The Navy Department and the U. S. Shipping Board have inquiries out for engine lathes. The General Electric Co. is also in the market for equipment. Detroit and Chicago territories continue to furnish a goodly number of orders, particularly the former. Some local manufacturers expect to see a fairly good buying movement before the end of the year, as a number of corporations and railroads have indicated that they will spend the balance of their appropriations for this year, rather than turn it back into the general treasury. Prices generally are holding very firm.

The Hooven-Owens-Rentschler Co., Hamilton, Ohio, has plans completed for a pattern storage building, work on which will commence shortly.

The U. S. Engineers' Office, Louisville, Ky., will open bids Dec. 15, for furnishing and delivering operating machinery for locks and dams Nos. 44 and 45, Ohio River. Further information may be had on application.

The U. S. Engineers' Office, Huntington, W. Va., will receive bids until Dec. 10 for furnishing and delivering steel hull maneuver boat for Dam No. 32, Ohio River.

The Union Gas & Electric Co., Cincinnati, has completed plans for the erection of a power generating plant to cost about \$20,000,000. A site has not yet been selected, but it will either be at Cincinnati or adjacent to the company's coal properties in West Virginia. W. W. Freeman is president.

The Paper Service Co., Cincinnati, has awarded contract for a manufacturing building, 79 x 125 ft., one-story of reinforced concrete, to the Ferro-Concrete Construction Co. Paper making machinery will be installed. The plant will be built in Arlington Heights, suburb of Cincinnati, where the offices and works of the company are located.

The City Council, Hamilton, Ohio, has passed an ordinance authorizing the sale of the municipal electric light plant to the Union Gas & Electric Co., Cincinnati, for \$500,000. The latter company will contract to furnish power to the city at the present rate for 25 years. The sale of the plant will mean that the construction of the proposed new plant, the engineering work on which has practically been completed, will be abandoned.

The Hydraulic Press Mfg. Co., Mt. Gilead, Ohio, is inquiring for a used No. 33 Lucas precision horizontal boring, drilling and milling machine with one plain supplementary 4-in. boring bar 7 ft. 8 in. long.

The Ohio Public Service Co., Alliance, Ohio, is disposing of a bond issue of \$2,400,000, a portion of the proceeds to

be used for extensions in power plants and system and the installation of additional equipment. T. O. Kennedy is vice-president.

The W. F. Robertson Steel & Iron Co., Elm and Commerce Streets, Cincinnati, has tentative plans for the construction of new works at Marietta, Ohio. W. F. Robertson is head.

## Cleveland

CLEVELAND, NOV. 19.

**I**NQUIRIES showed an increase during the week, several being for three or four machines. In some cases these are regarded as market feelers covering prospective business that may not be placed before January. The volume of sales is light. No business of any size is coming from automobile companies. Builders of turret lathes report a fair volume of inquiry for single machines. The National Screw & Mfg. Co., Cleveland, during the week purchased four or five lathes and has inquiries pending for a 36-in. and 30-in. planing machine; the General Phonograph Mfg. Co., Elyria, purchased a press and tapping machine and the Timken Roller Bearing Co., Canton, a large straightening machine. The Cleveland Hardware Co. has purchased 12 board drop hammers. The New York Central Railroad, which has a list pending, has sent out a supplemental list inquiring for three or four punching and shearing machines.

The J. B. Foote Foundry Co., Fredericktown, Ohio, will build an addition 30 x 100 ft. to be used as a cleaning department.

The Deckard-Mitchell Engineering Co., Cleveland, has purchased a factory in Shelby, Ohio, formerly occupied by the Shelby Tractor & Truck Co. and will equip it for the manufacture of automobile parts. H. C. Deckard, president, was formerly the plant manager of the Reliance Electric & Engineering Co., Cleveland, and has been connected with various automobile companies. C. M. Mitchell, who is associated with the company, has also been affiliated with motor car companies.

The Akron Barrow Co. is moving from Akron, Ohio, to 3140 East Sixty-fifth Street, Cleveland. It has been engaged in business in Akron for 30 years.

The Humphrey Mfg. Co., Mansfield, Ohio, is planning the erection of a factory building.

The Minerva Mfg. Co., Minerva, Ohio, will erect a three-story factory, 40 x 90 ft.

The Youngstown Boiler & Tank Co., Youngstown, Ohio, is planning the erection of two buildings, 40 x 400 ft. and 30 x 200 ft., respectively.

## Indiana

INDIANAPOLIS, NOV. 19.

**P**LANs are being considered by the Edwards Valve Co., 145th Street, East Chicago, Ind., for the erection of an addition. W. W. Crawford is president and general manager.

The Wabash Valley Refining Co., Terre Haute, Ind., will commence the construction of the initial unit of its plant to manufacture lubricating oils, to cost about \$45,000 with equipment. It will be located on the site of the former works of the Ball Brothers Glass Co.

The Indiana Glass Co., Dunkirk, Ind., is planning the construction of a new plant to cost in excess of \$100,000, including machinery. Frank Murray is president.

Bids will be received by the Board of Marion County Commissioners, Marion, Ind., until Dec. 11, for two refrigerating plants to be installed at county institutions. Plans and specifications on file at the office of the auditor of Marion County.

Manual training equipment will be installed in the new two-story and basement high school to be erected at Vincennes, Ind., estimated to cost \$225,000, for which bids will be asked on a general contract early next year. John P. Bayard, 231½ Main Street, is architect.

The Union City Body Co., Union City, Ind., manufacturer of automobile bodies, has acquired a site and is arranging for the erection of a new plant. C. C. Koontz is secretary and treasurer.

S. B. Harting, Elwood, Ind., has acquired the plant and equipment of the Elwood Castings Co. at a bankruptcy sale. The new owner has plans under consideration for the organization of a company to improve and operate the works.



## Detroit

DETROIT, Nov. 19.

**P**LANs are being drawn by the Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich., for a one-story addition, 100 x 200 ft., to its paper mill on the River Road, to cost about \$85,000. Billingham & Cobb, Press Building, are architects.

The Trippensee Body Co., 5685 Twelfth Street, Detroit, manufacturer of automobile bodies, has awarded a contract to F. J. Winter, Dime Bank Building, for a one-story addition.

Fire, Nov. 7, destroyed a portion of the handle manufacturing plant of the D. A. Stratton Co., Atlantic Mine, near Houghton, Mich., with loss estimated at \$150,000, including machinery. It is planned to rebuild.

The Cadillac Motor Car Co., 2060 Clark Avenue, Detroit, has awarded contract to the A. A. Albrecht Co., Penobscot Building, for three one-story foundry additions to cost about \$400,000 with equipment.

The State Highway Department, Lansing, Mich., will have plans drawn for the construction of a central automobile service and repair works, with garage, at East Lansing, for motor trucks and cars used by the department. It will cost in excess of \$150,000, including equipment and has been authorized by the State administrative board.

The Capitol Brass Co., 2306 Franklin Street, Detroit, will commence the erection of a new three-story plant, 60 x 150 ft., estimated to cost \$100,000 with equipment. Raseman & Freler, Penobscot Building, Detroit, are architects.

The Pampa Lumber Co., Houghton, Mich., has tentative plans for rebuilding the portion of its mill and power house destroyed by fire Nov. 11, with loss estimated at \$45,000, including equipment.

The Dunn Sulphite & Paper Co., Detroit, has taken title to property on the St. Clair River, Port Huron, Mich., as a site for a new pulp and paper mill, with power house, machine shop and other buildings, estimated to cost \$500,000 including machinery.

The Stiner Piston Ring Co., 535 Larned Street, Detroit, has tentative plans for extensions and the installation of additional equipment. It is said that a plant site will likely be acquired at another location for the expansion.

The Wiley Battery Shop, Addison, Mich., is planning the installation of equipment for a new repair works, including a press, bench tools, etc.

Manual training equipment will be installed in the new three-story junior high school to be erected at Ironwood, Mich., estimated to cost \$700,000, for which bids will be received on a general contract until Dec. 18. Croft & Boerner, 1006 Marquette Avenue, Minneapolis, Minn., are architects.

## Gulf States

BIRMINGHAM, Nov. 19.

**W**ORK will commence on an addition to the power plant of the Houston Light & Power Co., Houston, Tex., to cost about \$100,000, including equipment.

The Transcontinental Oil Co., Fort Worth, Tex., has construction in progress on a new unit at its local refinery for the production of lubricating oils, and plans the early installation of machinery. A new gasoline plant is also being built and other extensions will be made. The company has an appropriation of about \$1,500,000, for expansion.

The Mississippi Power & Light Co., Jackson, Miss., recently formed to take over local electric power properties, as well as plants and systems at Vicksburg, Columbus and Greenville, Miss., is disposing of a bond issue of \$1,200,000, a portion of the proceeds to be used for extensions and the installation of additional equipment. H. C. Couch is president.

The Anniston Ice & Coal Co., Eighth and Atlanta Avenues, Anniston, Ala., recently formed, has plans for a new ice-manufacturing plant, 85 x 110 ft. A. L. Scarbrough is president and general manager.

The Oak City Furniture Co., Tuscaloosa, Ala., lately organized, is having plans drawn for a new factory, 100 x 100 ft. Electric power equipment will be installed. M. C. Rumley is president, and J. M. Nunally, general manager.

K. H. Smith, Austin, Tex., is organizing a company to build and operate an electric light and power plant in the vicinity of Elgin, Tex., to cost about \$50,000. It is also proposed to build an ice-manufacturing plant.

The Ford Motor Co., Highland Park, Mich., has tentative plans under advisement for a new assembling plant at Dallas, Tex., on a tract of 20 acres. It will be one-story, 300 x 800 ft., estimated to cost \$350,000 with machinery, supplementing the present plant at Henry and Williams Streets. A. J. Langford is southern manager.

The Alabama Polytechnic Institute, Auburn, Ala., is planning the construction of a new college of engineering, with electrical and mechanical departments, machine shop, laboratories, etc., for which a fund of \$300,000 is available. Warren, Knight & Davis, Auburn, are architects.

The Decatur Cornice & Roofing Co., Decatur, Ala., has issued a list of equipment to be installed at its new plant, to replace the works recently destroyed by fire, including an electric traveling crane, one hand-operated crane, electric hoists, high speed drills, lathe, drill press, bolt and pipe threading machine, power hack saw, power punches, and other equipment. Both new and rebuilt tools will be considered. Henry R. Davis is secretary in charge.

The Tampa Sand & Shell Co., P. O. Box 921, Tampa, Fla., has inquiries out for one hoisting machine with 3 friction drums, about 30 hp. capacity; also, one 12 ft. bull-wheel, with derrick fittings, for a 55 ft. boom.

An electric power plant will be constructed by the Cowikee Mills, Inc., Eufaula, Ala., at its new textile mill at Union Springs, Ala., estimated to cost about \$300,000. The entire machinery installation will approximate \$150,000. Donald Comer is president.

The Hanlon Gasoline Co., Breckenridge, Tex., operated by Chestnutt & Smith, Inc., Tulsa, Okla., has preliminary plans for a new gasoline refinery with capacity of 50,000 gal. per day. It will also make extensions in its local oil refinery and install additional machinery. The entire project will cost about \$2,000,000. Purchase has been made of the two local gasoline refineries and other properties of the Hi-Power Gasoline Co.

The Bessemer Galvanizing Works, 2321 Jefferson County Bank Building, Bessemer, Ala., has plans for the construction of a one-story works, 100 x 120 ft. The installation will include a 5-ton electric traveling crane and electric hoist with capacity of about 3 tons. The plant will cost about \$35,000. William M. Clark is manager and construction engineer.

W. H. Dexter, P. O. Box 665, Jacksonville, Fla., machinery dealer, has inquiries out for a 60-in. veneer lathe, also for two fast-feed planers and matchers.

The Common Council, Malone, Tex., is planning for the installation of electric pumping machinery in connection with a new waterworks plant, for which a bond issue is being arranged. The local Chamber of Commerce is interested in the project.

In connection with its proposed new plant at Attalla, Ala., the Compress Buckle Co., Memphis, Tenn., is planning the establishment of a new department to manufacture wire rivets, coat hangers and kindred steel wire products. The company has contracted with the Gulf States Steel Co., Birmingham, for a minimum supply of 600 tons of wire per annum.

The Montgomery Sand & Gravel Co., Montgomery, Ala., recently formed, is planning the development of properties in the vicinity of Mount Meigs, Montgomery County. A power house will be built. All machinery will be electrically-operated, including hoisting, conveying and other apparatus. The installation will cost about \$150,000. H. G. Ireland is president and C. B. Ireland, general manager.

The Bessemer Galvanizing Works, Bessemer, Ala., in its new plant will galvanize large tanks up to 8 ft. in diameter, structural material up to 56 ft. long and other materials such as castings and pipe. It was erroneously stated in these columns previously that bolts, nails, etc., would be galvanized. W. M. Clark is manager.

## Pacific Coast

SAN FRANCISCO, Nov. 14.

**P**LANs are being arranged by the Samson Tire & Rubber Corporation, Compton, Cal., for enlargements totaling about 50,000 sq. ft. of floor space. It is proposed to install machinery to double the present output. Adolph Schleischer is president.

The Pacific Pipe Co., Main and Folsom Streets, San Francisco, desires prices on nipple machines and is in the market for one or more.

The Standard Sanitary Mfg. Co., Bessemer Building, Pittsburgh, manufacturer of enameled iron sanitary ware, has awarded a general contract to Cahill Brothers, 110 Sutter Street, San Francisco, for its five-story and basement works and distributing plant, 100 x 180 ft., at Ninth

and Brannan Streets, to cost about \$285,000. Weeks & Day, 315 Montgomery Street, San Francisco, are the architects.

The American Crushed Rock Co., 622 American Bank Building, Los Angeles, is planning the construction of a new plant on a 170-acre tract in the San Antonio Wash. Claremont, Cal. The initial machinery installation will provide for a daily output of about 50 cars and is estimated to cost \$150,000. Most of the equipment will be electrically-operated.

The Ditlefson Machine Works, Seattle, Wash., has acquired property in the South Lake Union District, and has preliminary plans for the erection of a new factory.

The San Joaquin Portland Cement Co., Three Rivers, Cal., is perfecting plans for a new cement mill with initial capacity of 3500 bbl. per day, estimated to cost \$1,000,000 with machinery. A power plant and machine shop will be built. G. F. Hamburg and F. A. Parker, both officials of the Old Mission Portland Cement Co., 608 Crocker Building, San Francisco, head the company.

The Vanderuff Petroleum Co., Inc., San Francisco, is planning the construction of a new refinery in the vicinity of Devil's Den, Lost Hills section, to cost \$60,000. It will have an initial output of 250 bbl. per day. W. S. Hillyer is superintendent.

The Tacoma Gas & Fuel Co., Tacoma, Wash., is planning the construction of a steam-operated power plant in connection with a new artificial gas manufacturing plant, estimated to cost \$250,000 with machinery.

The Western Oxygen Co., Los Angeles, manufacturer of industrial oxygen products, is taking bids for a new plant on Fifty-eighth Street. Oliver G. Bowen, Van Nuys Building, is engineer.

Ernest C. Hillman, 2317 East Sixteenth Street, Los Angeles, will commence the construction of a new machine shop, 60 x 102 ft., at 749-51 Kohler Street, to cost \$14,000 exclusive of equipment.

The Turlock Irrigation District, Turlock, Cal., has approved a bond issue of \$500,000, the entire fund to be used for extensions in the electrical plant and system, including power substations and machinery transmission lines, etc.

## Canada

TORONTO, NOV. 19.

THE machine tool trade is finding a plentiful supply of inquiries, but sales are small in comparison. The demand as a whole, however, is good and while the majority of sales is for one or two tools, practically all industrial activities are covered. Inquiries are out for some fairly good sized lists, but it is not expected that much of this business will be closed until after the first of the year. The Canadian railroads are conservative buyers for car shops, chiefly for replacements. The automotive industry is also a good customer and an active demand is reported for tools in small numbers for garages and repair shops. The woodworking industry is showing renewed interest and orders for sawmill and lumber mill machinery are increasing.

The Dickey Woodworking Mills, Stewiacke, N. S., is in the market for machinery and tools for a planing mill.

The township of Teck is preparing to install an electric lighting plant at Swastika, Ont. M. Campbell, Kirkland Lake, Ont., is clerk.

J. Duffen, Welland, Ont., and R. W. Wright, Dunkirk, N. Y., will establish a plant at Port Colborne, Ont., for the manufacture of brick, etc., and are asking for equipment.

The Canadian de Vains Process Co., Montreal, is in the market for special machinery for the manufacture of cellulose pulp, paper products and by-products. L. G. Bell, 107 St. James Street, is purchasing agent.

The Swift Canadian Co., Ltd., will start work at once on the erection of three packing plants at Sapperton, B. C., to cost \$250,000.

The Beaver Truck Corporation, Ltd., Hamilton, Ont., has awarded the general contract to John Patterson for foundation work in connection with a \$150,000 factory to be erected on Queen Street East, Brampton, Ont.

C. Alfred Maguire, chairman of the Board of Control, Toronto, Ont., will receive bids until Jan. 15 for one air compressor and one 3,000,000 Imperial gal. centrifugal sludge pump and motor.

The North Shore Power Co., Baptiste Power Building, Three Rivers, Que., is having plans prepared for a hydro-

electric power house and mills on River Batiscan, to develop 5000 hp. The present power plant will be demolished and the new one erected on the site. J. C. Smith, Montreal, is engineer.

The Ottawa River Power Co., Ltd., Montreal, has awarded the general contract for a dam and power house at Calumet Island Falls, near Bryson, Que., to Fraser, Brace, Ltd., 83 Craig Street West, Montreal, at \$2,000,000. William Kennedy & Sons, Ltd., Montreal, and Dr. L. A. Herdt are engineers. William Kennedy, Jr., will buy the hydro machinery and Dr. L. A. Herdt will buy the electrical machinery and equipment.

The Hull Steel Foundries, Ltd., Hull, Que., has purchased the Skilling, Whitney & Barnes Co. property at Ogdensburg, for the manufacture of steel grates, fireboxes, and locomotive parts.

The J. C. Wilson Mfg. Co. Box 308, Belleville, Ont., is in the market for a 10-ft. boring mill. A second-hand machine in good order will be considered.

The T. E. Bissell Co., Ingersoll, Ont., manufacturer of agricultural implements, etc., is in the market for metal-working machinery, lathes, drills and special equipment for a machine shop.

The Canada Steamships, Ltd., Victoria Square, Montreal, will purchase equipment for a coal handling plant at Fort William, Ont.

Compagnie de Poinconneuse Automatique de Fiches, Ltd., Ottawa, Ont., is asking for machinery and tools for the manufacture of self-feeding gang punching machines. G. E. Robert, 301 King Edward Avenue, Ottawa, is purchasing agent.

L. N. Haurd, 129 Commerciale Street, Levis, Que., proposes to install an electric power development plant of 17,000-hp. capacity on the Megiscane River, Temiscamingue County, and also the erection of newsprint and pulp mill to cost \$2,000,000.

The Walsh Electric Co., 456 Church Street, Toronto, has purchased a site at 255 Church Street, for manufacturing purposes. The present building will be razed and a new four- or five-story factory will be erected.

The Kaustine Co., Ltd., Dundas, Ont., manufacturers of sanitary closets, etc., has let the general contract to F. G. Haskings & Co., for a factory addition.

The Yellow Cab Co., Ltd., Montreal, a subsidiary of the Yellow Cab Mfg. Co., Chicago, Ill., recently incorporated here, proposes to erect a Canadian manufacturing plant to manufacture and repair taxicabs, etc. The high cost of importing cabs from the United States is the reason given for the locating of a plant in the Dominion. The Montreal sales office of the company is at 120 St. James Street.

The Town Council, Port Colborne, Ont., contemplates the construction of a waterworks plant to cost \$90,000, to include storage basin, pump house, two 750-gal. motor-driven pumps, one 1500-gal. gasoline driven pump; three pressure filter units, a 2,000,000-gal. elevated tank, etc. E. H. Darling, Home Bank Building, Hamilton, Ont., is engineer.

Belleville, Ont., proposes to erect a pumphouse and to install a gasoline driven fire pump of about 3,000,000-gal. capacity, estimated to cost \$35,000. Gore, Nasmith & Storrie, Confederation Life Building, Toronto, are engineers.

## Western Canada

J. Overlin, Portland, Ore., contemplates the erection of plant on Granville Island, Vancouver, B. C., for the manufacture of motor trucks, automobiles, etc.

J. H. Scott, Marpole, Point Grey, Vancouver, B. C., proposes to erect a factory for the manufacture of fertilizers, etc.

## Equipment for Australian Railroads

WASHINGTON, Nov. 20.—The Industrial Machinery Division, Department of Commerce, has announced that the Victorian Government Railways, Melbourne, Australia, are inviting bids on the following machinery and equipment:

One spring coiling machine and all necessary equipment, including a set of electrical motive apparatus.

One taper rolling machine, including electrical motive apparatus.

One combination turret lathe, including leading screws and nuts and taper turning attachment.

One gear cutting machine.

One automatic cross cut saw.

One cross grooving and trenching machine.

One planing and thicknessing machine, including side cutters.

Tenders close at Melbourne on Jan. 9, 1924.

A copy of specifications covering the equipment may be consulted by interested manufacturers at the Boston and New York district offices and at the Cincinnati cooperative office of the Bureau of Foreign and Domestic Commerce.



STEEL AND INDUSTRIAL STOCKS

The range of active iron and industrial stocks from Monday of last week to Monday of this week was as follows:

|                           | Low     | High    |                            | Low     | High    |
|---------------------------|---------|---------|----------------------------|---------|---------|
| Allis-Chalmers ..         | 41 1/4  | 42 3/4  | Int. Har. ....             | 74 1/4  | 76 7/8  |
| Allis-Chal. pf. ...       | 91      | 91      | Jones & L'lin pf. 107 1/4  | 108     | 108 1/2 |
| Am. B. S. & Fdy. 73 3/4   | 73 3/4  | 74 1/4  | Lima Loco. ....            | 63 1/4  | 68 1/4  |
| Am. B.S. & F. pf. 104     | 104     | 104     | Midvale Steel ..           | 26 1/2  | 27      |
| Am. Can. ....             | 97 1/4  | 102 1/4 | Nat.-Acme .....            | 7       | 7 1/4   |
| Am. Can pf. ....          | 108 3/4 | 109 1/4 | Nat. En. & Stm. 37 3/4     | 41 1/2  | 41 1/2  |
| Am. Car & Fdy. 159        | 164     | 164     | N. Y. Air Brake. 37        | 38 1/2  | 38 1/2  |
| Am. C. & F. pf. 121 1/4   | 121 1/4 | 121 1/4 | Nova Scotia Stl..          | 14 1/4  | 14 1/2  |
| Am. Locomotive. 72        | 74 3/4  | 74 3/4  | Otis Steel .....           | 7 1/4   | 8 1/4   |
| Am. Loco. pf. ....        | 118 1/4 | 118 1/4 | Otis Steel pf. ....        | 46 1/2  | 48      |
| Am. Radiator ..           | 83      | 85      | Pressed Steel Car 53       | 55      | 55      |
| Am. Steel fdries. 37 1/4  | 38 1/4  | 38 1/4  | Pressed Steel pf. 86       | 87 7/8  | 87 7/8  |
| Am. Stl. Fd. pf. ....     | 100 3/4 | 101 1/2 | Replogle Steel ..          | 9 1/2   | 10 1/2  |
| Bald. Loco. ....          | 122 3/4 | 127 3/4 | Republic .....             | 45 1/2  | 48      |
| Bald. Loco. pf. 113       | 113     | 113     | Republic pf. ....          | 90      | 90 1/4  |
| Beth. Steel .....         | 48 3/4  | 51 3/4  | Sloss-Sheffield ..         | 48      | 51 1/4  |
| Beth. Stl. 7 3/4 pf. 89   | 89 3/4  | 89 3/4  | Sloss-Sheffield pf. 79     | 80 1/4  | 80 1/4  |
| Beth. Stl. 8 3/4 pf. 102  | 102     | 102     | Steel of Canada 69         | 69      | 69      |
| Br. Em. Steel. ....       | 4 1/4   | 4 1/4   | Superior Stl. 1 pf. 98 3/4 | 98 3/4  | 98 3/4  |
| Br. Em. Stl. 2 pf. 12 1/4 | 13 1/4  | 13 1/4  | Un. Alloy Steel..          | 31      | 31      |
| Chic. Pneu. Tool 80       | 81 1/4  | 81 1/4  | U. S. Pipe .....           | 36 3/4  | 40 7/8  |
| Colo. Fuel .....          | 22 1/4  | 23 3/4  | U. S. Pipe pf. ....        | 83      | 84      |
| Crucible Steel ..         | 63      | 66      | U. S. Steel .....          | 91 3/4  | 95 1/4  |
| Crucible Stl. pf. ....    | 90 1/4  | 91 3/4  | U. S. Steel pf. ....       | 118 3/4 | 120 1/4 |
| Deere pf. ....            | 62      | 63      | Vanadium Steel. 28 3/4     | 31 1/4  | 31 1/4  |
| Gen. Electric ..          | 178 1/4 | 182 1/2 | Va. L. C. & Coke 53        | 54      | 54      |
| Gt. No. Ore Cert. 30      | 32      | 32      | W'house Air Br..           | 80 3/4  | 81      |
| Gulf States Steel 78      | 81 1/4  | 81 1/4  | Y'gstown S. & T. 64 1/4    | 66      | 66      |

Wheeling Steel Corporation Report

Report of the Wheeling Steel Corporation for the quarter ended Sept. 30, showed net profit of \$1,214,142 after depreciation, interest, etc., equivalent after regular dividends on preferred stock to \$1.58 a share earned on \$39,402,786, outstanding common stock. Net profits for the first nine months of 1923 were \$4,006,467 or \$5.68 a share on the common stock after preferred dividend requirements. The income account for the quarter and nine months ended Sept. 30 follows:

|                         | Sept.<br>Quarter | 9 months<br>ended Sept. 30. |
|-------------------------|------------------|-----------------------------|
| Total income .....      | \$2,283,203      | \$7,112,221                 |
| Depr. and exh. of min.. | 717,665          | 2,274,421                   |
| Interest .....          | 351,396          | 831,333                     |
| Net profit .....        | \$1,214,142      | \$4,006,467                 |

Dominion Alloy Steel Corporation Plans

The Dominion Alloy Steel Corporation, Ltd., Sarnia, Ont., is offering \$3,000,000, worth of 8 per cent cumulative convertible preferred stock as a part of the financing of this new organization. The company was formed for the purpose of erecting a modern plant at Sarnia, for the manufacture of alloy, high carbon and special quality steel, the plant to include both open-hearth and electric furnaces, rolling mills, heat treating plant, machine shops and testing laboratories. The company has acquired a manufacturing site of 250 acres on the St. Clair River, adjoining the city of Sarnia. Authorized capital consists of \$7,500,000 in 8 per cent cumulative convertible preferred stock, par value \$10, and \$7,500,000 in common stock, par value \$10. William B. Boyd, Toronto, Ont., formerly electrical engineer, Illinois Steel Co., Chicago, and at one time chief electrical engineer of the Dominion Iron & Steel Co., Sydney, N. S., is president, and the directorate includes C. Harold Wills, Marysville, Mich.; president C. H. Wills Motor Co., Marysville, Mich.; George A. Simpson, Hamilton, Ont., formerly sales manager and special representative of the Steel Co. of Canada, Ltd., Hamilton, and J. J. Mahon, Newark, N. J. consulting steel metallurgist, formerly chief engineer of the Crucible Steel Co. of America.

Industrial Finance

President Wylie R. Reynolds of the Reynolds Spring Co. states that although business during the last quarter of the current year is "normally slow" it will be the best quarter of the year, "exceeding the third quarter, when net income after taxes and charges amounted to \$112,000." Net earnings for the first nine months of 1923, before Federal taxes and depreciation, were \$330,285, as compared with \$241,300 for the corresponding period in 1922. Total assets of the company on Sept. 30, 1923, amounted to \$3,120,973, of which \$1,346,429 represents total current assets. This compares with total current liabilities of \$21,847. Net surplus at the end of September was \$444,043.

Net earnings of the Sloss-Sheffield Steel & Iron Co. for

October amounted to \$153,004 for stock, compared with \$125,394 in September. Earnings over the ten months were \$2,306,282, equal after preferred dividend requirements to \$19.15 per share on 100,000 common shares.

The Acade Malleable Iron Co., Springfield and Worcester, Mass., has sold \$550,000 7 per cent first mortgage sinking fund bonds dated Nov. 1, last, and maturing in 1943 at par and accrued interest. Money derived from the sale will be used in connection with the acquisition of properties. H. P. Blumenauer, Worcester, is president and general manager.

The board of directors of the International Oxygen Co., Newark, N. J., at the meeting on Nov. 10, declared a dividend of \$3 per share on all outstanding stock, payable on or about Dec. 15.

The balance sheet of the Bock Bearing Co., Toledo, Ohio, as of Oct. 1, showed current assets, less all reserves, of \$477,337, including cash of \$34,302, against which stand total liabilities of \$198,657. The company has no bonds or long-time notes. At a recent meeting a new directorate was elected; vesting control of the company in the hands of preferred stockholders, as stated in THE IRON AGE of Nov. 8, page 1287.

Stockholders of the Pittsburgh Steel Co., Pittsburgh, have approved an increase in capital from \$14,000,000 to \$19,000,000.

The United States Hammered Piston Ring Co., Bath, N. Y., has arranged for a change of name to the Royal Piston Ring Co.

The Packard Motor Car Co., Detroit, shows net profit for the year ended Aug. 31, of \$7,081,879 after expenses, interest, taxes, etc., equivalent after preferred dividends to \$2.54 a share (par \$10) earned on the \$23,770,200 common stock. Figures for 1922 showed a net profit of \$2,115,828 or 90 cents a share on outstanding \$11,885,100 common stock. Sales for this year totaled \$55,670,464, or an increase of nearly 50 per cent over 1922.

Gross business of the Hayes Wheel Co. for the ten months ending Oct. 31 totaled \$15,716,000, compared with \$12,968,000 for the entire year 1922. Net earnings will not be disclosed until the end of the year, but are reported unofficially to be at the rate of \$9 or \$10 a share on common stock.

Sales of the Studebaker corporation for the first nine months of 1923 totaled 122,586 cars as compared with 90,252 for the corresponding period in 1922. Net sales amounted to \$139,021,191, an increase of \$30,532,435 over last year's corresponding nine months. The actual number of cars produced during this period was 124,155. Net profits from sales, after deductions for taxes, reserves and expenses, amounted to \$18,226,254 for the period, against \$15,640,374 for that period in 1922, an increase of \$2,585,880.

The United States Cast Iron Pipe & Foundry Co. has declared a dividend of 1/4 per cent on common stock and an equal amount as an extra disbursement on preferred, bringing total payments on the latter to \$7.50 in 1923. It is understood that the extra payment was declared for the purpose of testing the right to distribute more than 7 per cent on the senior stock in one year.

Expansion of the Chevrolet Motor Co.

The Chevrolet Motor Co., division of General Motors Corporation, has increased its manufacturing facilities so that a production of approximately 2500 cars per day can be maintained. During the past three years, each of the seven older plants manufacturing or assembling Chevrolet cars, trucks and parts has been enlarged and five new plants have been added. In 1921, 77,605 vehicles were produced. In 1922, 242,373 Chevrolet cars and trucks were sold in the United States and exported and production this year will approach the half million mark. The main plant at Flint has been increased to a total floor space of 1,335,000 sq. ft. and the St. Louis assembly plant now contains 1,127,800 sq. ft. of manufacturing space. The Oakland assembly plant has been increased to almost half a million feet, and the Tarrytown assembly plant is 50 per cent in excess of this unit. The large General Motors plant at Janesville, Wis., has been converted to the assembling of Chevrolet cars and this factory contains approximately 500,000 sq. ft., and in addition, new plants have been erected at Buffalo and Cincinnati, totaling together over a half-million sq. ft.

The other plants, engaged in the production of Chevrolet axles, gears, forgings, transmissions and small parts, in Detroit, Toledo and Bay City, bring the grand total of floor space devoted to the manufacture and assembly of Chevrolet cars, trucks and parts up to 5,427,393 sq. ft. The number of employees in the 12 plants devoted to the manufacture of Chevrolet products now totals 22,675 and is being increased from time to time.

# Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

## Iron and Soft Steel Bars and Shapes

### Bars:

|   |                  |
|---|------------------|
| Refined iron bars, base price .....                                       | 3.54c.           |
| Swedish charcoal iron bars, base....                                      | 7.00c. to 7.25c. |
| Soft steel bars, base price .....   | 3.54c.           |
| Hoops, base price .....   | 5.19c.           |
| Bands, base price .....   | 4.39c.           |
| Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base ..... | 3.64c.           |
| Channels, angles and tees under 3 in. x ¼ in. base .....                  | 3.54c.           |

### Merchant Steel

|  | Per Lb.          |
|--|------------------|
| Tire, 1½ x ½ in. and larger .....              | 3.60c.           |
| (Smooth finish, 1 to 2½ x ¼ in. and larger) .. | 4.10c.           |
| Toe-calk, ½ x ¾ in. and larger .....           | 4.60c.           |
| Cold-rolled strip, soft and quarter hard ..    | 7.50c. to 8.50c. |
| Open-hearth, spring-steel .....                | 4.50c. to 7.50c. |
| Shafting and Screw Stock:                      |                  |
| Rounds .....                                   | 4.40c. to 4.65c. |
| Squares, flats and hex.....                    | 4.90c. to 5.15c. |
| Standard tool steel, base price.....           | 15.00c.          |
| Extra tool steel .....                         | 18.00c.          |
| Special tool steel .....                       | 23.00c.          |
| High speed steel, 18 per cent tungsten.....    | 75c. to 80c.     |

### Tank Plates—Steel

|                         |        |
|-------------------------|--------|
| ¼ in. and heavier ..... | 3.64c. |
|-------------------------|--------|

### Sheets

#### Blue Annealed

|              | Per Lb.          |
|--------------|------------------|
| No. 10 ..... | 4.20c. to 4.59c. |
| No. 12 ..... | 4.25c. to 4.64c. |
| No. 14 ..... | 4.30c. to 4.69c. |
| No. 16 ..... | 4.40c. to 4.79c. |

#### Box Annealed—Black

|   | Soft Steel<br>C. R. One Pass<br>Per Lb. | Blued Stove<br>Pipe Sheet<br>Per Lb. |
|---|---|--------------------------------------|
| Nos. 18 to 20.....                            | 4.30c. to 4.70c.                        | .....                                |
| Nos. 22 and 24.....                           | 4.35c. to 4.85c.                        | 5.10c.                               |
| No. 26 .....                                  | 4.40c. to 4.90c.                        | 5.15c.                               |
| No. 28 .....                                  | 4.50c. to 5.00c.                        | 5.25c.                               |
| No. 30 .....                                  | 4.70c. to 5.20c.                        | .....                                |
| No. 28 and lighter, 36 in. wide, 20c. higher. |   |                                      |

#### Galvanized

|   | Per Lb.          |
|---|------------------|
| No. 14 .....                                  | 4.60c. to 5.10c. |
| No. 16 .....                                  | 4.75c. to 5.25c. |
| Nos. 18 and 20.....                           | 4.90c. to 5.40c. |
| Nos. 22 and 24.....                           | 5.05c. to 5.55c. |
| No. 26 .....                                  | 5.20c. to 5.70c. |
| No. 27 .....                                  | 5.35c. to 5.85c. |
| No. 28 .....                                  | 5.50c. to 6.00c. |
| No. 30 .....                                  | 5.95c. to 6.45c. |
| No. 28 and lighter, 36-in. wide, 20c. higher. |                  |

### Welded Pipe

| Standard Steel     |       | Wrought Iron        |       |
|--------------------|-------|---------------------|-------|
| Black              | Galv. | Black               | Galv. |
| ½ in. Butt.. —41   | —24   | ½ in. Butt.. —4     | +19   |
| ¾ in. Butt.. —46   | —32   | ¾ in. Butt.. —11    | +9    |
| 1-3 in. Butt.. —48 | —34   | 1-1½ in. Butt.. —14 | +6    |
| 2½-6 in. Lap.. —44 | —30   | 2 in. Lap... —5     | +14   |
| 7-8 in. Lap.. —41  | —11   | 2½-6 in. Lap —9     | +9    |
| 9-12 in. Lap. —34  | —6    | 7-12 in. Lap. —3    | +16   |

### Steel Wire

|                            | Per Lb.          |
|----------------------------|------------------|
| Bright basic .....         | 4.75c. to 5.00c. |
| Annealed soft .....        | 4.75c. to 5.00c. |
| Galvanized annealed .....  | 5.40c. to 5.65c. |
| Coppered basic .....       | 5.40c. to 5.65c. |
| Tinned soft Bessemer ..... | 6.40c. to 6.65c. |

\*Regular extras for lighter gage.

## Brass Sheet, Rod, Tube and Wire

### BASE PRICE

|                            |                |
|----------------------------|----------------|
| High brass sheet .....     | 17½c. to 18¾c. |
| High brass wire .....      | 18¼c. to 19¼c. |
| Brass rods .....           | 15½c. to 16½c. |
| Brass tube, brazed .....   | 25¼c. to 27¼c. |
| Brass tube, seamless ..... | 22¼c. to 23¼c. |
| Copper tube, seamless..... | 23½c. to 24½c. |

### Copper Sheets

|   |  |
|---|--|
| Sheet copper, hot rolled, 20c. to 21c. per lb. base.                  |  |
| Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled. |  |

### Tin Plates

| Bright Tin | Grade    | Grade    | Coke—14 x 20 | Prime  | Seconds |
|------------|----------|----------|--------------|--------|---------|
|            | "AAA"    | "A"      |              |        |         |
|            | Charcoal | Charcoal |              |        |         |
|            | 14x20    | 14x20    |              |        |         |
| IC..       | \$12.55  | \$10.70  | 80 lb..      | \$6.55 | \$6.30  |
| IX..       | 13.95    | 12.55    | 90 lb..      | 6.65   | 6.40    |
| IXX..      | 15.55    | 13.75    | 100 lb..     | 6.75   | 6.50    |
| IXXX..     | 17.10    | 15.30    | IC..         | 7.00   | 6.75    |
| IXXXX..    | 18.85    | 16.80    | IX..         | 8.25   | 8.00    |
|            |          |          | IXX..        | 9.50   | 9.25    |
|            |          |          | IXXX..       | 10.75  | 10.50   |
|            |          |          | IXXXX..      | 12.00  | 10.75   |

### Terne Plates

|                      | 8 lb. coating, 14 x 20 |
|----------------------|------------------------|
| 100 lb. ....         | \$7.00 to \$8.00       |
| IC .....             | 7.25 to 8.25           |
| IX .....             | 8.25 to 8.75           |
| Fire door stock..... | 9.00 to 10.00          |

### Tin

|                   |              |
|-------------------|--------------|
| Straits pig ..... | 45c.         |
| Bar .....         | 50c. to 55c. |

### Copper

|                    |       |
|--------------------|-------|
| Lake ingot .....   | 15½c. |
| Electrolytic ..... | 15¼c. |
| Casting .....      | 14¼c. |

### Spelter and Sheet Zinc

|                                    |                 |
|------------------------------------|-----------------|
| Western spelter .....              | 7½c.            |
| Sheet zinc, No. 9 base, casks..... | 10½c. open 11c. |

### Lead and Solder\*

|                                |              |
|--------------------------------|--------------|
| American pig lead.....         | 8c. to 8½c.  |
| Bar lead .....                 | 10c. to 12c. |
| Solder ½ and ½ guaranteed..... | 32c.         |
| No. 1 solder.....              | 30c.         |
| Refined solder .....           | 26c.         |

\*Prices of solder indicated by private brand vary according to composition.

### Babbitt Metal

|                               |              |
|-------------------------------|--------------|
| Best grade, per lb.....       | 75c. to 90c. |
| Commercial grade, per lb..... | 35c. to 50c. |
| Grade D, per lb.....          | 25c. to 35c. |

### Antimony

|               |              |
|---------------|--------------|
| Asiatic ..... | 11c. to 12c. |
|---------------|--------------|

### Aluminum

|   |      |
|---|------|
| No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb..... | 36c. |
|---|------|

### Old Metals

Prices continue fairly firm but demand is quiet. Dealers' buying prices are nominally as follows:

|  | Cents<br>Per Lb. |
|--|------------------|
| Copper, heavy crucible .....                 | 11.25            |
| Copper, heavy wire.....                      | 10.75            |
| Copper, light bottoms .....                  | 9.00             |
| Brass, heavy .....                           | 6.00             |
| Brass, light .....                           | 5.00             |
| Heavy machine composition .....              | 9.00             |
| No. 1 yellow brass turnings .....            | 6.25             |
| No. 1 red brass or composition turnings..... | 8.00             |
| Lead, heavy .....                            | 6.00             |
| Lead, tea .....                              | 5.00             |
| Zinc .....                                   | 4.00             |
| Cast aluminum .....                          | 15.25            |
| Sheet aluminum .....                         | 15.25            |